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# PUBLIC HEALTH

## *and The Nation's Health*

The 84th Annual Meeting
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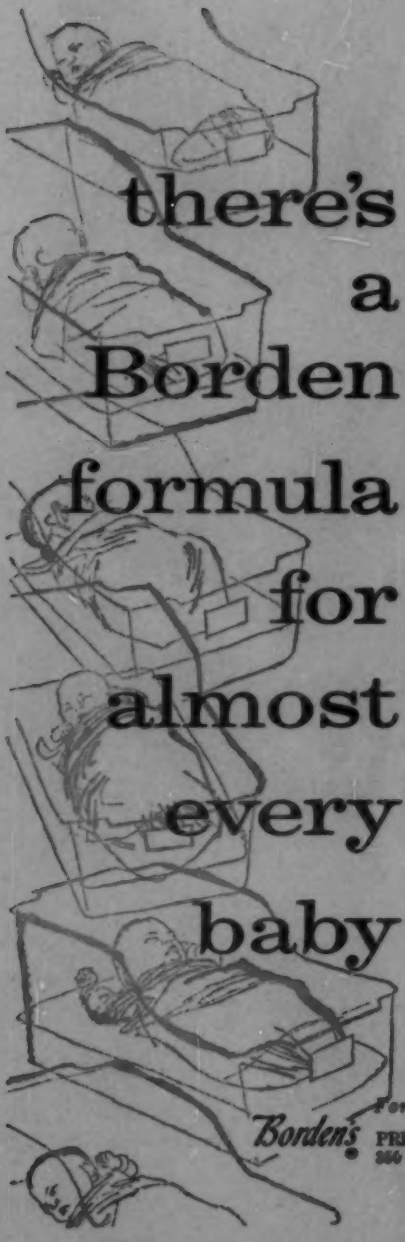
**MARCH, 1956**

volume 46

number 3



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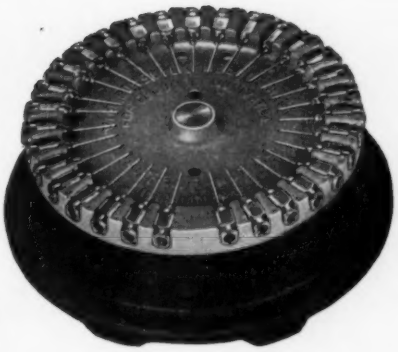

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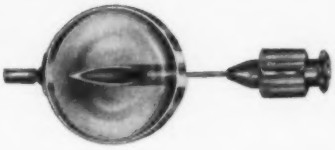

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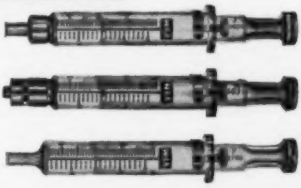

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The American Journal of Public Health is published by the American Public Health Association, Inc., at 374 Broadway, Albany 7, N. Y. Executive office 1790 Broadway, New York 19, N. Y. Subscription price $10.00 per year for United States, Cuba and Mexico, South and Central America; $10.50 for Canada; and $11.00 for other countries. Single copies $1.00 postpaid. Entered as second-class matter at the Post Office at Albany, N. Y., September 17, 1932, under the Act of March 3, 1879. Published monthly. Copyright 1956, by American Public Health Association, Inc. The American Journal of Public Health is indexed in the Industrial Arts Index and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts, Chemical Abstracts, Engineering Index, and Public Affairs Information Service.

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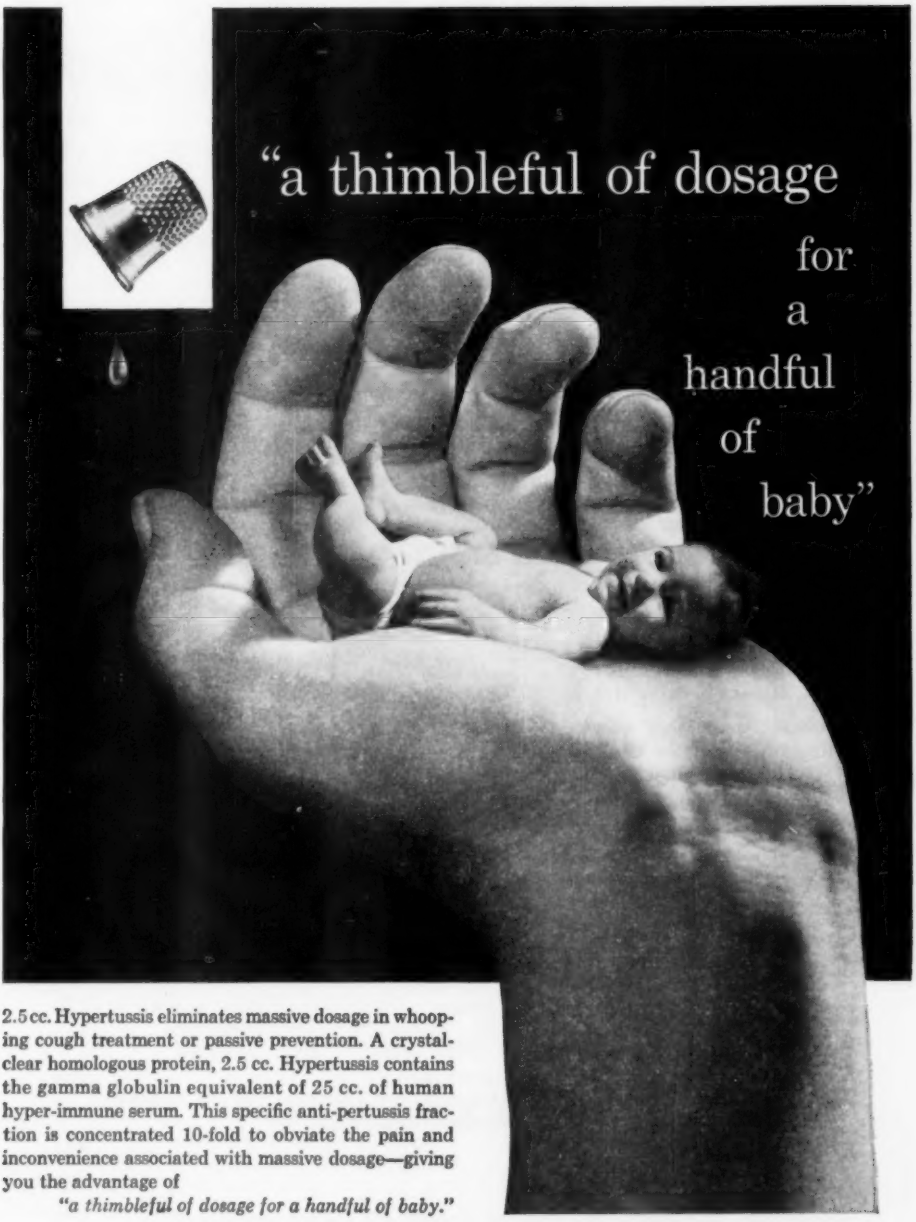


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We believe it incumbent on Ross Laboratories to encourage and to participate in fundamental and applied research in the field of nutrition. The M & R Pediatric Research Conference program will be carried on as the Ross Pediatric Research Conferences. This program is but one instrument for achieving this objective. We shall continue with renewed vigor our efforts to provide means for further enhancement of the practice of medicine for infants and children.

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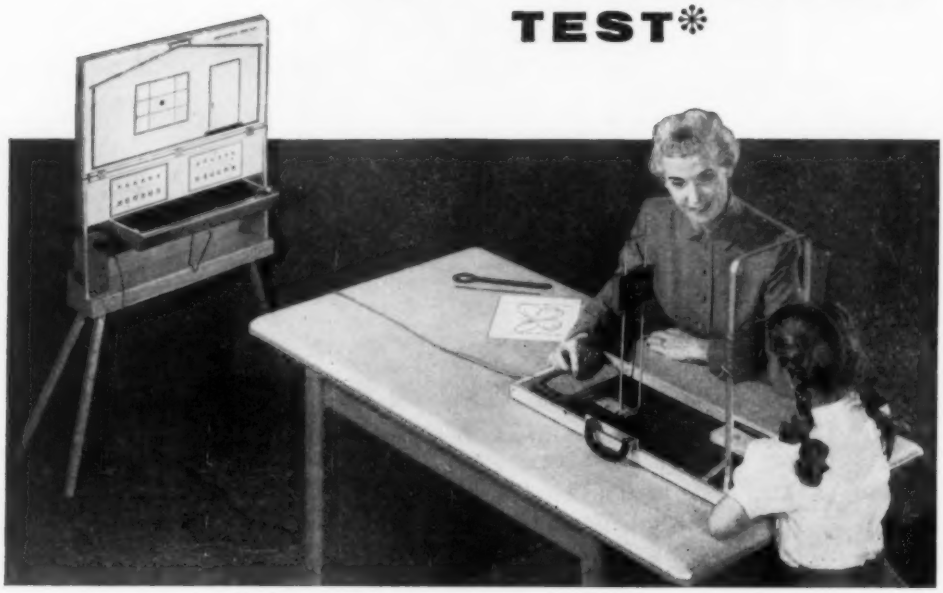

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[1] Antibiotics & Chemotherapy, Vol. IV, No. 9, Sept, 1954
[2] Antibiotics & Chemotherapy, Vol. II, 30, 1952
[3] Antibiotics & Chemotherapy, Vol. III, 409, 1953
[4] Nebraska M.J., 37:251, 1952.

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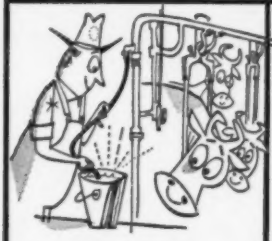

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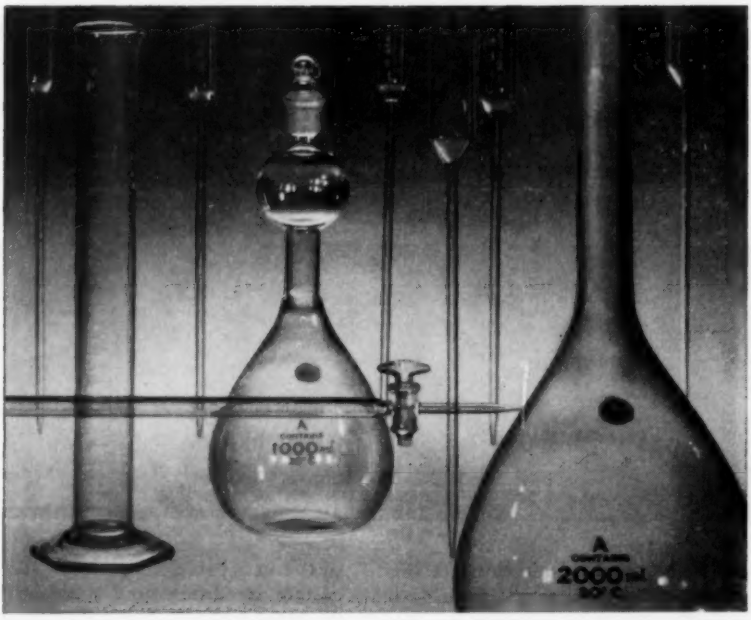


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## Purina *laboratory animal* Nutrition News

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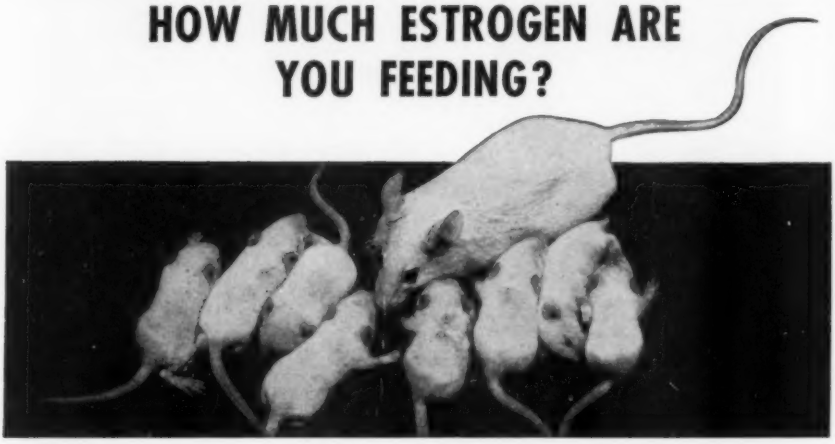

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We can well understand your concern because there have been some unfortunate instances where laboratory animal feeds have been contaminated with harmful levels of estrogen.

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[1] Nelson, R. A., Jr.: Science, 118: 733, 1953.
[2] Portnoy, J., and Magnuson, H. J.: J. Immunol., 75: 348, 1955.

# *These Figures Tell the Story*

| NUTRIENTS and CALORIES | N.R.C. ALLOWANCES* Physically Active Male | CEREAL SERVING CONTRIBUTION** | PER CENT OF DAILY ALLOWANCES |
|---|---|---|---|
| PROTEIN | 65 Gm. | 7.85 Gm. | 12 |
| CALCIUM | 0.8 Gm. | 0.17 Gm. | 21 |
| IRON | 12 mg. | 1.44 mg. | 12 |
| PHOSPHORUS | 1.2 Gm. | 0.215 Gm. | 18 |
| VITAMIN A | 5000 I.U. | 187.5 I.U. | 4 |
| THIAMINE | 1.6 mg. | 0.16 mg. | 10 |
| RIBOFLAVIN | 1.6 mg. | 0.24 mg. | 15 |
| NIACIN | 16 mg. | 1.4 mg. | 9 |
| CALORIES | 3200 | 208 | 6.5 |

## OF THE NUTRIENT CONTRIBUTION OF THE CEREAL AND MILK SERVING . . .

As the table above vividly shows, the nutrient contribution of the cereal and milk serving** is unusually generous, not only as to the number of nutrients, but also as to the amount of each nutrient supplied. In the case of most nutrients, 10 per cent or more of the National Research Council's Recommended Daily Dietary Allowances for a physically active male is supplied by this serving. Any food which contributes 10 per cent of the daily requirement of a given nutrient in each 200 calories of that food, is considered a good source of that nutrient. A glance at the chart above shows that the cereal and milk serving comes close to making this ideal contribution. Of added nutritional significance is its generous contribution of B complex vitamins and iron and the high calcium content.

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*National Research Council's Recommended Daily Dietary Allowances—Revised 1953.

**1 oz. of breakfast cereal (whole grain, enriched or restored), 4 oz. whole milk, 1 teaspoonful of sugar. Based on composite average of breakfast cereals on dry weight basis.

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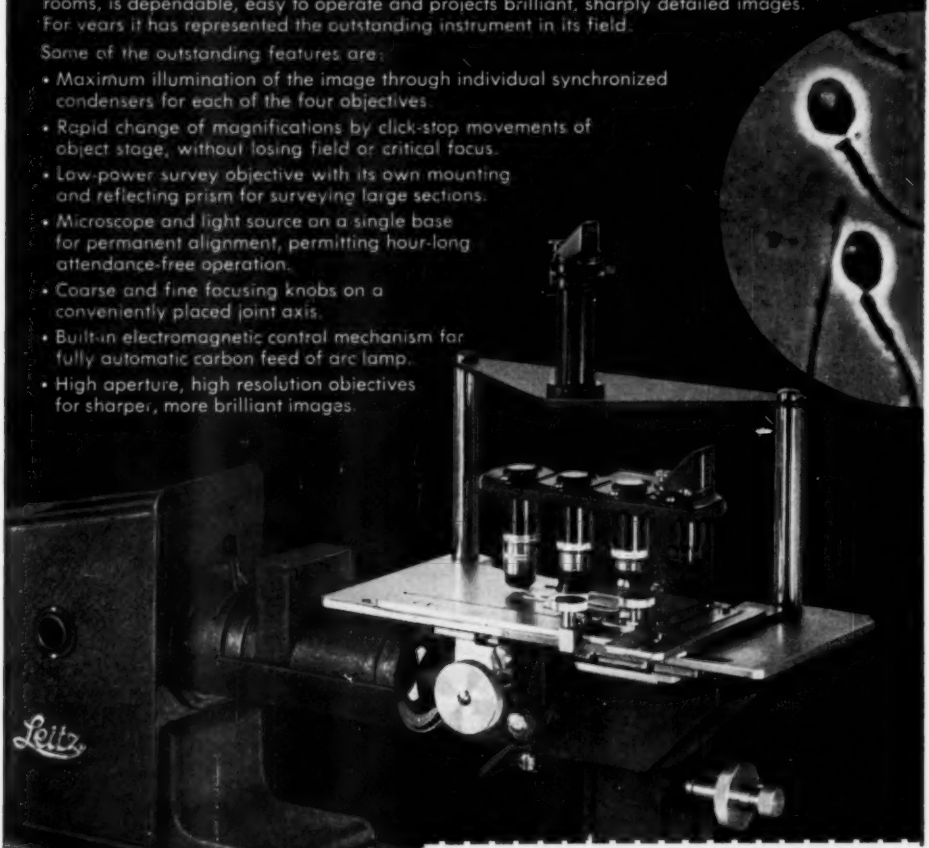


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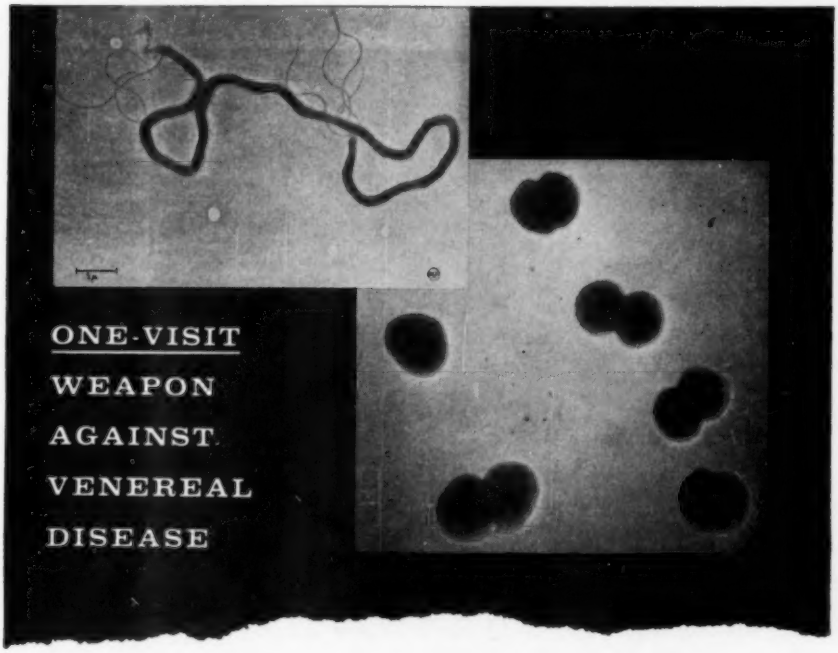


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1. Smith, C.A., and others: Am. J. Syph., Gonor. & Ven. Dis. *38*:136 (March) 1954. 2. Council on Pharmacy and Chemistry. New and Nonofficial Remedies. J. B. Lippincott Co., Philadelphia, 1955, p. 166.

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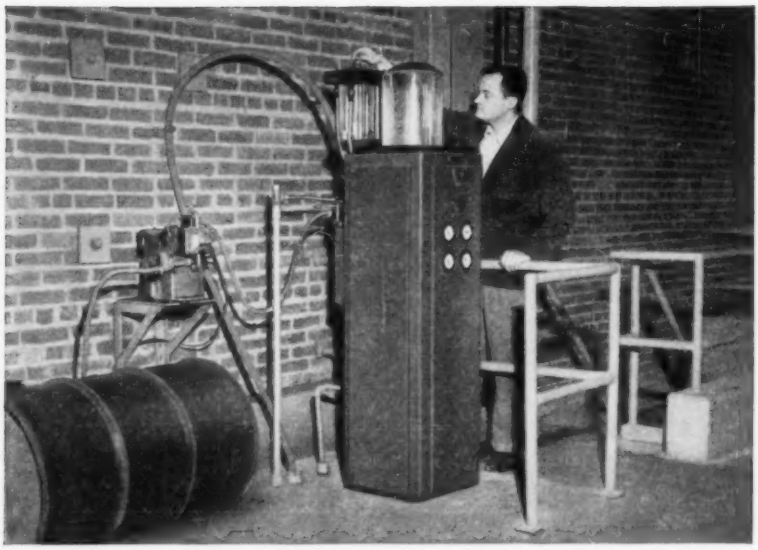

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American Journal of

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Official Monthly Publication of the American Public Health Association, Inc.

Volume 46 March, 1956 Number 3

# The Conclusion of a Ten-Year Study of Water Fluoridation

DAVID B. AST, D.D.S., M.P.H., F.A.P.H.A., and
EDWARD R. SCHLESINGER, M.D., M.P.H., F.A.P.H.A.

***Here in capsule form is a resumé of the Newburgh-Kingston Caries-Fluorine Study after a decade, with some additional information on the safety of water fluoridation.***

In areas where the potable water supplies contain the fluoride ion at optimum concentration at the source, the dental caries experience of children who ingest these water fluorides during the years of tooth development is about 60 per cent less than among children in areas with fluoride-deficient water supplies.[1] Adults who have used such water supplies continuously enjoy the dental benefits obtained during childhood.[2]

Controlled water fluoridation for the prevention of dental caries, i.e., the addition of fluoride compounds in optimum concentration to fluoride-deficient supplies, has been studied since 1945 in three different areas. These studies have demonstrated that dental caries can be effectively reduced through controlled water fluoridation to the same extent as observed in areas where water contains the fluoride at the source. A recent review[3] presented the DMF (decayed, missing, or filled teeth) rates for six- to 10-year-old children after nine years of fluoride experience in Grand Rapids, Mich., Newburgh, N. Y., and Brantford, Ontario, and compared these data with those in Aurora, Ill., which uses a water supply with naturally occurring fluoride at 1.2 ppm F. At ages six to nine the rates in all four communities were found to be quite comparable and at age 10 the rates for the three communities fluoridating their water supplies approached the expectancy level noted in Aurora.

One of the most comprehensive of the studies, the Newburgh-Kingston Caries-Fluorine Study has recently issued its final report based on 10 years of fluoridation experience. The report, consisting of three definitive papers

Dr. Ast is director, Bureau of Dental Health, and Dr. Schlesinger is associate director, Division of Medical Services, New York State Department of Health, Albany, N. Y.

dealing with the history of the study and its pediatric and dental aspects, and a fourth paper dealing with fluoride metabolism, was presented before the New York Institute of Clinical Oral Pathology on December 12, 1955. These papers appear in the March, 1956, issue of the Journal of the American Dental Association.[4-7]

Prior to the initiation of controlled water fluoridation programs in 1945 extensive epidemiological investigations[8a, b] had demonstrated (1) the occurrence of a defect of tooth enamel which discolored and, in extreme cases, caused pitting of the enamel; (2) the discovery that the stain or mottled enamel was caused by the ingestion of water-borne fluorides during the years of enamel calcification; (3) the direct relationship of the degree of mottling to the fluoride content of the water; (4) an inverse relationship of dental caries to fluorosed or mottled teeth; and (5) that where the water supply contained approximately 1.0 ppm F, the residents enjoyed considerable protection against dental caries without the hazard of disfiguring mottled enamel.

Cox and his co-workers[9] in 1939 suggested that the addition of fluorides to food and water to bring the fluoride content up to the optimum level could prevent dental caries if ingested during the years of tooth development. Ast[10] in 1942 outlined a plan to test the caries-fluorine hypothesis. He suggested a study of two comparable communities with fluoride-deficient water supplies, one of which should have its water supply supplemented with sodium fluoride to bring its fluoride content up to 1.0 ppm and the second to serve as a control.

This plan was considered by the New York State Department of Health. In 1944 a Technical Advisory Committee on the Fluoridation of Water Supplies was appointed to study the proposal. The committee was also asked to recommend the types of medical and dental examinations which should be made to determine the efficacy and safety of water fluoridation. After a careful review of the literature and the objectives of the study, the committee recommended that a long-range study be undertaken. The cities of Newburgh and Kingston, each with a population of approximately 30,000, situated about 35 miles apart on the west bank of the Hudson River and using fluoride-deficient water supplies, were asked to participate in a 10-year study. Newburgh agreed to serve as the study area and to have its water supply supplemented with sodium fluoride to bring its fluoride content up to 1.0–1.2 ppm. Kingston agreed to serve as the control and continue to use its water supply with approximately 0.1 ppm F.

In June, 1944, base line pediatric and dental examinations were begun and on May 2, 1945, Newburgh's water supply was fluoridated. This process has been in continuous operation since that date. The base line data showed that the children aged six to 12 in both cities had a similar dental caries experience. The Kingston rate was 20.2 DMF teeth per 100 permanent teeth and the Newburgh rate was 20.6. Periodic progress reports have demonstrated a downward trend in the dental caries experience among the children in Newburgh. In Kingston the caries rates have remained relatively unchanged.

In June, 1955, clinical and intraoral dental roentgenographic examinations were completed after 10 years of fluoride experience. In Newburgh 1,519 children aged six to 14 and 109 aged 16 who had had continuous residence there throughout the period of fluoridation were examined. The Kingston children examined included 2,021 aged six to 14 and 119 aged 16. The clinical examinations were made in both cities by the staff senior dentist and the roentgenograms were taken by the staff

**Table 1—DMF * Teeth per 100 Children Ages 6–16, Based on Clinical and Roentgenographic Examinations, Newburgh † and Kingston, N. Y., 1954–1955**

| Age ‡ | Number of Children with Permanent Teeth | | Number of DMF Teeth | | DMF Teeth per 100 Children with Permanent Teeth ** | | |
|---|---|---|---|---|---|---|---|
| | Newburgh | Kingston | Newburgh | Kingston | Newburgh | Kingston | Per cent Difference K-N |
| 6– 9 § | 708 | 913 | 672 | 2,134 | 98.4 | 233.7 | — 57.9 |
| 10–12 | 521 | 640 | 1,711 | 4,471 | 328.1 | 698.6 | — 53.0 |
| 13–14 | 263 | 441 | 1,579 | 5,161 | 610.1 | 1,170.3 | — 47.9 |
| 16 | 109 | 119 | 1,063 | 1,962 | 975.2 | 1,648.7 | — 40.9 |

* DMF includes permanent teeth decayed, missing (lost subsequent to eruption), or filled.
† Sodium fluoride added to Newburgh's water supply beginning May 2, 1945.
‡ Age at last birthday at time of examination.
** Adjusted to age distribution of children examined in Kingston who had permanent teeth in the 1954-1955 examination.
§ Newburgh children of this age group exposed to fluoridated water from time of birth.

senior dentist and dental hygienist. The films were developed and sent to the Dental Bureau office in Albany. There statisticians randomized the film series so that the interpreters did not know whether they were reading Newburgh or Kingston films.

The children aged six through nine years in Newburgh had used fluoridated water throughout their lives. The 10- to 12-year-old children, who were under two years of age in 1945, had used fluoridated water during the partial calcification of the crowns of the first permanent molars and throughout the calcification of the second permanent molar crowns. The 13- to 14-year-old children were three to four years old in 1945. These children started drinking fluoridated water after the calcification of the crowns of the first molar teeth but prior to the eruption of these teeth, and throughout the period of calcification of the crowns of the second molars. The 16-year-old children were six years of age when fluoridation was started. At that time their first permanent molars were beginning to erupt into the mouth and the crowns of their second molars were almost fully calcified.

The DMF rate for the six- to nine-year-old children in Newburgh was 58 per cent lower than that for the Kingston children. The 10- to 12-year-old children in Newburgh had a DMF rate 53 per cent lower. At ages 13 to 14 the DMF rate was 48 per cent lower, and at age 16 it was 41 per cent lower, than the rates in Kingston (Table 1).

The first permanent molar is frequently referred to as the keystone of the dental arch and warrants special consideration because of its strategic position in the mouth. This tooth, because of its morphology and the early age at which it erupts into the mouth, frequently succumbs to dental caries early in life. It is therefore significant to note that among the six- to nine-year-old children in Newburgh the DMF rate for first permanent molars was 53 per cent lower than that for the Kingston children in the same age group. The DMF rate in Newburgh at ages 10 to 12 was 30 per cent lower, at ages 13 to 14 it was 14 per cent lower, and at age 16 it was 4 per cent lower, than in Kingston (Figure 1).

Of even greater significance is the observation that the children in Newburgh at age six to nine had 68 per cent fewer untreated carious first molars and 88 per cent fewer first molars lost than did

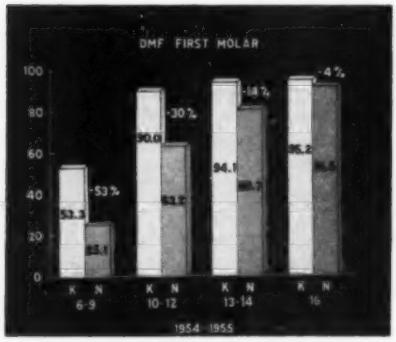


**Figure 1**

the Kingston children of the same ages. The 10- to 12-year-old children in Newburgh had a rate 45 per cent lower for untreated caries and 78 per cent lower for missing first molars. At ages 13 to 14 the differences were 26 per cent for untreated caries and 42 per cent for missing first molars, and at age 16 the differences were 41 per cent for untreated caries and 32 per cent for missing first molars (Table 2).

Another significant observation was that ingested water fluorides afford selective protection to the proximal (adjacent) surfaces of the teeth in comparison with the occlusal (biting) surfaces. This is highly important because the proximal surfaces present difficulties in both caries detection and correction. Frequently caries on the proximal surface of a tooth requires the cutting of much sound tooth structure in order to place an adequate filling in the tooth. At each of the age levels studied the per cent of differentiable carious proximal surfaces among the Kingston children was about three times greater than that noted in the Newburgh children.

At ages six through nine all of the deciduous cuspids and deciduous molars are normally present in the mouth. If any of these teeth are missing it may reasonably be presumed that they were lost because of caries. Among the six- to nine-year-old children in Newburgh 25.5 per cent had all these teeth present and caries free, as compared with 4.7 per cent of the Kingston children (Table 3).

Dean's [11] epidemiological studies of endemic dental fluorosis demonstrated that there was no disfiguring dental fluorosis at the level of about 1.0 ppm F. Unfortunately, the term mottled enamel or dental fluorosis is applied to all degrees of this condition. In its more severe forms it does produce discoloring stains and possibly pitting of the enamel. However, in the milder forms of fluorosis the enamel of the tooth has a high luster which enhances

**Table 2—Status of Erupted First Permanent Molars in Children Ages 6–16, Based on Clinical and Roentgenographic Examinations, Newburgh * and Kingston, N. Y., 1954–1955**

| | Per cent of Erupted First Permanent Molars † | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Caries-Free | | DMF ** | | Filled | | Untreated Caries | | Missing | |
| Age ‡ | Newburgh | Kingston | Newburgh | Kingston | Newburgh | Kingston | Newburgh | Kingston | Newburgh | Kingston |
| 6–9 § | 74.9 | 46.7 | 25.1 | 53.3 | 14.2 | 17.8 | 10.6 | 33.2 | 0.3 | 2.4 |
| 10–12 | 36.8 | 10.0 | 63.2 | 90.0 | 40.2 | 41.3 | 20.5 | 37.1 | 2.5 | 11.6 |
| 13–14 | 19.3 | 5.9 | 80.7 | 94.1 | 43.9 | 40.5 | 27.0 | 36.7 | 9.8 | 16.9 |
| 16 | 8.5 | 4.8 | 91.5 | 95.2 | 55.0 | 36.6 | 20.9 | 35.5 | 15.6 | 23.1 |

* Sodium fluoride added to Newburgh's water supply beginning May 2, 1945.
† Adjusted to the first permanent molar population in the Kingston 1954–1955 examination.
‡ Age at last birthday at time of examination.
** DMF includes permanent teeth decayed, missing (lost subsequent to eruption), or filled.
§ Newburgh children of this age group exposed to fluoridated water from time of birth.

**Table 3—Number and Per Cent of Children Age 6–9 with Caries-Free Deciduous Cuspids, First and Second Deciduous Molars, Based on Clinical and Roentgenographic Examinations, Kingston and Newburgh,* N. Y., 1954–1955**

| Age † | Number of Children Examined | | Number of Children with All 12 Teeth Present and Caries Free | | Per cent Children with All 12 Teeth Present and Caries-Free | |
|---|---|---|---|---|---|---|
| | Kingston | Newburgh | Kingston | Newburgh | Kingston | Newburgh |
| 6 | 216 | 184 | 24 | 68 | 11.1 | 37.0 |
| 7 | 255 | 208 | 12 | 58 | 4.7 | 27.9 |
| 8 | 277 | 213 | 5 | 53 | 1.8 | 24.9 |
| 9 | 192 | 129 | 3 | 13 | 1.6 | 10.1 |
| Total | 940 | 734 | 44 | 192 | 4.7 | 26.2 |
| Adjusted rate ‡ | | | | | 4.7 | 25.5 |

* Sodium fluoride added to Newburgh's water supply beginning May 2, 1945.

† Age at last birthday at time of examination. Newburgh children of these ages exposed to fluoridated water from time of birth.

‡ Adjusted to the age distribution of Kingston children in the 1954-1955 examination.

the beauty of the tooth rather than disfigures it. The detection of the early signs of dental fluorosis requires an examiner who has had extensive experience in areas of endemic fluorosis. The average dental practitioner would in all probability not detect the earliest signs of mottling.

In order to determine whether the children in Newburgh showed any signs of dental fluorosis a specially trained officer of the Public Health Service with long experience in the detection of the mildest of such lesions was requested to make the examinations. He examined 621 children aged seven to 14 in Newburgh, of whom 438 had resided there continuously since the start of fluoridation. In Kingston 612 children of the same ages were examined. In addition to dental fluorosis, examinations were made for enamel opacities due to causes other than ingested fluorides. These other enamel opacities are generally developmental hypoplasias. They usually appear as circular white or colored patches and most of them are obvious even to the untrained eye.

Among the 438 children with continuous residence in Newburgh, 46 had questionable fluorosis, 26 had very mild, and six had mild fluorosis. There were no cases of moderate or severe mottling and in no instance was there any disfiguring discoloration. Thirty-six of the Newburgh children examined had nonfluoride opacities. Of the 612 children examined in Kingston, 115 had nonfluoride opacities. The relatively infrequent occurrence of nonfluoride enamel opacities in Newburgh compared with Kingston tends to confirm a previous report [12] that ingested water fluorides at the recommended concentration appear to reduce the occurrence of hypoplastic spots on the teeth.

The same groups of children examined for enamel opacities were also examined for evidence of gingivitis. A positive score was recorded only for flagrant gingivitis, thus making it possible to place greater emphasis on advanced disease and minimize examiner bias. There was slightly, but significantly, more gingivitis observed among the Kingston children than among those in Newburgh.

The final report on the pediatric findings of the Newburgh-Kingston study pointed out that all the scientific evi-

dence available at the time the study was first proposed indicated the safety of drinking water containing about 1.0 ppm F at the source. There was no reason at that time to believe that fluorides, when added to the drinking water as part of the water treatment process, would act in any way differently from fluorides already present. Nevertheless, it was considered desirable to test this remote possibility under the carefully controlled conditions established for the long-term Newburgh-Kingston study.

Closely similar groups of children were studied in Newburgh and Kingston. In the final year of the study 500 of the children enrolled in Newburgh and 405 in Kingston were examined in the study clinic. The points of concentration in the examination were those related to possible systemic effects of fluoride ingestion as manifested by changes in growth and development or in abnormalities on the physical, laboratory, and roentgenographic examinations. Each child was given a general medical examination by a qualified pediatrician. Height and weight were measured. Roentgenograms were taken of the right hand, both knees, and the lumbar spine. Bone density and bone age (maturation of the skeleton) were estimated by independent observers who were not aware of the city of origin of the individual roentgenograms. Laboratory examinations, including hemoglobin level, total leucocyte count, and routine urinalysis were also made. No differences of medical significance could be found between the groups of children in the two cities. This indicated the absence of any findings suggestive of systemic effects from the drinking of fluoridated water during the period of most rapid growth. In addition, special detailed studies of the eyes and ears were performed on a smaller group of children; these included determination of visual acuity, visual fields, and hearing levels. The results of these special examinations were well within the range of expected prevalence of the conditions studied.

Reference was made to another recently published paper [13] which presented further evidence for the absence of systemic effects from fluoridated water. The purpose of this study was to determine whether any irritative effects on the kidneys follow prolonged use of fluoridated water. The quantitative excretion of albumin, red blood cells, and casts in 12-hour urine specimens in 12-year-old boys, using a modified Addis technic, was determined in the two cities. The differences in the results between the groups in the two cities tended to favor the Newburgh children, but no medical significance could be attributed to any of the differences.

The review of current knowledge of the metabolism of fluorides, particularly in the human body, applied this information in estimating the factors of safety in water fluoridation. Knowledge of blood fluoride levels, of the rate and mechanism of urinary excretion of fluoride, and of the magnitude and mechanism of bone deposition increases our understanding of some important biological effects of toxic doses of fluorides, such as acute fluoride poisoning, crippling fluorosis, osteosclerosis, and mottled enamel.

The blood fluoride level in experimental animals given lethal doses of fluoride rises to a peak in a half hour to an hour, falls rapidly within two to three hours, and returns to its normal level within 24 hours. The blood does not tend to accumulate fluoride, although the blood fluoride level in persons drinking fluoridated water is somewhat higher than in persons drinking fluoride-deficient water.

When human beings ingest small amounts of fluoride a significant fraction is promptly excreted in the urine. It is probable that when human beings

ingest small amounts of fluoride equivalent to that of fluoridated water over a period of years, the daily urinary excretion is greater than half of the amount absorbed each day. The extraordinarily rapid and efficient urinary excretion of fluoride is attributable to a somewhat lower resorption of fluoride in the kidney tubules than is characteristic of chloride.

The other mechanism for removal of fluoride from the blood is by deposition in the bones, the amount of fluoride present in the hard tissues probably being directly dependent on the amount of fluoride taken into the body day after day. The mechanism of fluoride deposition is simple, the fluoride ion replacing the hydroxyl groups of the surface of the bone crystals. There is no indication that any notable biological disadvantage results from this. Fluoride deposition in bone is a reversible process.

With regard to acute fluoride poisoning there is at least a 2,500-fold factor of safety in water fluoridation. The mechanics of water fluoridation are such that it is impossible to produce acute fluoride poisoning either by accident or intent.

Crippling fluorosis, characterized by a stiffening in the back due to calcification of the broad ligaments of the back, occurs with a daily intake of 20 to 80 milligrams of fluoride or more for 10 to 20 years. Since five gallons of fluoridated water at 1 ppm F contain 20 milligrams, it is obvious that crippling fluorosis can never be produced by drinking fluoridated water. The earliest evidence of osteosclerosis, a hypercalcification detectable by roentgen examination, does not occur with an intake of fluoride below eight to 10 times the level of fluoridated water.

The evidence with respect to heart disease, kidney disease, cancer, and possible influence of fluoride on the thyroid is also reviewed. Ample statistics are available to indicate no influence of fluoride intake on any of these at the levels found in any water supplies in the United States. Studies on experimental animals with the use of radioactive fluoride show that the thyroid gland does not concentrate fluoride as it does iodide. The presence of renal impairment in experimental animals and in human beings with long-standing kidney disease appears not to affect excretion of fluoride by the kidneys.

The comprehensive analysis of the Newburgh-Kingston Caries-Fluorine Study after 10 years of experience, added to the wealth of evidence previously reported, demonstrates conclusively two important facts—fluoridation is effective in reducing dental caries and it is a safe public health practice.

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# Public Health: An Industrialist's Appraisal

ADMIRAL BEN MOREELL

*One of the features of the 83rd Annual Meeting was an Association Symposium "Where Are We Going in Public Health?" This dynamic statement by an outstanding industrialist was invited as a part of the opening session centered around "Basic Issues and Goals."*

When an amateur ventures into a professional field, he treads on shaky ground. Still, in the field of public health, as in others which concern the essential well-being of whole communities, maximum progress is made when we avail ourselves of the ideas and experiences of all who can make useful contributions. For, such procedure usually results in a synthesis of the best contributions of each, which leads to an effective working plan.

I am encouraged to enter on this effort by the many notable contributions to progress made by "nonspecialists," an historic example being the work of Shattuck, the merchant, in the field of public health, about a century ago. All of the great contemporary religions were revealed to us by inspired laymen. While no right-thinking person would suggest that public health be thought of as a religion, I am convinced that the basic precepts of a good public health program can be derived from certain fundamental concepts on which our American republic is founded and which stem from Judeo-Christian religious principles.

Basic to all others was the concept that God rules the universe, with its corollary, that all men are creatures of God. It follows that, if men are creatures of God, each man is sovereign in his relations with his fellowmen, and therefore has individual worth and dignity. This concept of individual sovereignty gave birth to the idea of limited government, a government which is forbidden to transgress on the rights of the individual.

From this there follow the concepts that: (a) the most important single thing in the American scheme of governmental and social organization is the individual human being; and (b) if we would have a good society, the individual, as long as he does not trespass on the natural rights of others, must be permitted to develop his God-given talents without restraints imposed by government, without interference from other individuals, and without avoidable hazards to his health and well-being.

But there is another facet to this scheme of things. It has to do with the moral obligations imposed on each one of us by his religious faith; that he must love God and, in the light of that love, he must love his neighbor as himself. Thus, we who believe in these concepts have an irrevocable obligation to come to the help of our neighbors-in-need with the same devotion with which we strive to help ourselves. And we must show that devotion by positive actions that count.

## Public Health and Moral Concepts

What does this have to do with public health? Our Declaration of Independence states that each one of us has inalienable rights to life, liberty, and the pursuit of happiness. It is a truism that the enjoyment of these rights, i.e., the ability to enter upon the pursuit of happiness, will depend largely on the

possession of a sound mind in a sound body. It follows that if we would reap the full benefits of our American traditions, each one of us has a moral obligation to contribute, voluntarily and generously, to the preservation of the health of the individuals who make up our society.

Ours is a highly industrialized community based on mass production, mass distribution, and mass consumption of the products of agriculture and industry. This requires huge concentrations of people in productive organizations. We support 165 million people of our own who, in turn, help support a large part of the rest of the world. Our people are no more talented than those of the countries whence they came. Our country is no more favored than many others in raw materials, fertile soil, climatic conditions, protective barriers, and other advantages. Furthermore, our natural resources lay for centuries relatively unused, supporting fewer than a million inhabitants. We have a duty to preserve the governmental and social structures which made our pre-eminence possible: public health is one of the main pillars which support these structures.

What is public health? The following definition is taken from a publication of the state of Pennsylvania: "Public health is organized community effort to prevent disease, prolong life, and protect and improve the health of the people."

As in other fields of our complex society, we have made great improvements in public health in recent decades. There have been spectacular reductions in communicable diseases, as well as major improvements in controls of environmental threats to health, hazards resulting from impure foods and water and disposal of wastes. But experience shows that for every problem solved, one or more new ones appear. Finding the best workable solution for each of these problems becomes more important and more urgent every day.

For this reason, we are developing at the University of Pittsburgh a great health center, an essential part of which is a Graduate School of Public Health. Under the terms of its endowment this school must make occupational health its chief concern. Pittsburgh is the heart of industrial America. We aim to make it the public health capital of the world. And we welcome strong competition. This will serve to make our leadership more vigorous and more significant.

## Current Problems vs. Obsolete Programs

Speaking as an industrialist, I would list our current major health problems under six headings: (1) our aging population; (2) chronic diseases; (3) mental hygiene; (4) industrial health; (5) hospital and medical care; and (6) prevention of accidents.

As we advance further into these areas and assume new and important responsibilities, we must have the courage to eliminate current programs which deal with obsolete problems. The bureaucrat is the antithesis of the pioneer. When programs become solidly entrenched in budgets of either public or private organizations it is almost impossible to eject them. In any city or state one finds huge expenditures for "warehousing" the sick, the tired, the helpless aged, and the indigent. These are in painful contrast to the meager sums spent for prevention of these disabilities.

We have an example in our own state

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This paper was presented at the Association Symposium (Part I) of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 14, 1955.

which, however, has no monopoly on this practice. We spend nearly 10 million dollars a year for tuberculosis hospitals. I am told that this sum is sufficient to finance a vigorous campaign that might well end the scourge in a few years. It appears that those who are already stricken can be used more effectively as the vehicle for an emotional appeal to the voters by ambitious politicians than can the thousands who may be stricken in the future as a result of our current neglect. This may explain why our major efforts are now directed along the lines of the so-called "conventional" concept of public health rather than to the solutions of the six problems I have mentioned, whose basic aims are prevention and rehabilitation.

I make no claim that industry is free from the restraints of outmoded policies and practices; many industrial health programs are still in the "horse and buggy" stage. But there is a growing realization that our nation's 65 million gainfully employed, working under widely varying conditions, provide an excellent opportunity for the furtherance of effective preventive medicine.

A good industrial medical program has as its prime purpose the elimination of hazards to the health of its workers. Therefore, public health, as I have defined it, has a staunch ally in occupational health. We should foster close cooperation between these allies, even if this be called "unconventional." Strict adherence to convention can retard progress in any field, including public health.

In some circles industrial medicine has been charged with being selfishly motivated. I suppose that, if one searches long enough, an alleged selfish purpose can be found in any human activity. In our corporation we do not attempt to justify our medical program by pointing to dollars-and-cents gains—we justify it as a moral obligation to our neighbors. A well planned and managed industrial health program will unquestionably result in more economic production. But if this be the sole motivating purpose, it will eventually fail, as do all programs inspired primarily by selfish motives.

## Industrial Health Policy

We regard our program as one of preventive medicine which cooperates with constructive public health activities. The goal is conservation, protection, and furtherance of the health and capabilities of the individual worker. Our policy has been well stated by our medical director, Dr. D. John Laver, in these words:

"Health is a personal matter. Man's well-being is dependent in large measure upon good health. Its influence is reflected in his ability to produce, in his relations with others, and in his future accomplishments. Industry is directly concerned with the health of its people.

"Every man is responsible for his own health. In this matter he often needs advice and guidance. Here industry can take the initiative through a preventive health program.

"Each person must be evaluated as an individual, with full consideration given to his total environment. Since the whole man comes to the job, it is often necessary to look for the causes of problems outside as well as inside his work environment. It is in this area that a good health program, well administered, can make a great contribution.

"There are two approaches to industrial health. The traditional one has been a negative and defensive approach. We propose a positive approach. In the negative approach the health facilities were used sparingly—only in occupationally connected injury and sickness—and only because of the legal obligations of the employer. The patient-employe at once sensed this negative attitude and

tended to respond with hostility and even contempt.

"In the positive approach all effort is directed toward the patient-employe with the objective of maintaining him in health and well-being."

With this statement as our guide we are moving forward in a planned campaign of preventive medicine. Industrial America is making progress in the solution of its problems. Many companies now recognize that their greatest asset is the health of their employes. They see a direct relationship between efficiency and health, which includes the health of the worker himself and that of the people in his home and in his community.

I shall not attempt to describe in detail the steps we are now taking. The target is prevention. This requires detection of current and potential exposures in work environment; health education; individual worker counseling; competent craftsmanship in medical work; rehabilitation; protection of the community against pollutions; contributions to community medical services; cooperation with the general practitioners in the community; and adaptation of industrial medicine to the total life and public health activities of the community.

Here, in industrial America, we have made a great discovery. Not so long ago we were deluged with gloomy propaganda designed to convince us that our economy is "tired and mature"; and that, with the disappearance of the natural frontiers in the west, we must resign ourselves to a condition of torpid complacency. We were told there was only one direction we could go; that was toward government regimentation, under which our best hope would be to achieve an equitable sharing of the ever-increasing poverty! The great discovery we have made is that by means of research in all areas of our activities, and by bold experimentation and risk-taking, we can create our own frontiers, which are even more adventuresome and stimulating and rewarding than was the development of the natural frontiers of the west!

## Pittsburgh Renaissance—Bricks and Mortar and Public Health

Some of you may have heard of the Pittsburgh Renaissance, the story of the rebirth of a typical mill city. We have cleaned our atmosphere, built new parks, skyscrapers, highways, schools, homes, a mammoth airport, and many other structures. But more important than this "bricks-and-mortar program" has been the reorganization of our City Health Department, made possible by the finest collaboration between Health Department staff, city officials, and citizens' committees, and based on a comprehensive survey of the City Health Department by the U. S. Public Health Service.

In the state outside of Pittsburgh things are beginning to stir. Until recently Pennsylvania had the most highly centralized public health program of any state of the Union. Our State Medical Society, a friendly body, rated it 42nd in effectiveness among the 48 states.

Now we are making progress. Our counties had to fight for the right to establish health departments. The old bureaucratic regimes and certain political organizations that believed in centralized control of patronage insisted that the state could handle all public health programs for local communities. In 1951 two laws were passed. One of these enabled counties to establish health units for the first time. The other enabled the State Health Department to establish a merit system covering all administrative, professional, and technical personnel. Already three counties, Bucks, Butler, and Erie, have set up health departments. Others are fol-

lowing their lead. They want public officials who are directly responsible to the people of the local communities.

I have gone into some detail on this subject because I believe that local health service provided by a county health department is the best mechanism for public health services in many areas. Furthermore, such a program provides effective means for rendering service in two important fields, which are: (1) off-the-job accidents—although industry can largely control accident injuries on the job, there is a great field for development of better home and traffic accident prevention. This can be translated into greater security for the worker; (2) off-the-job sickness—nonoccupational illnesses far outnumber occupational illness in terms of disability and lost time. Many of these are preventable, but we have not yet developed effective programs for their control.

## Industry and Community Responsibilities

I believe that our current problems could be summarized as follows: (1) We are lacking in basic knowledge—the need is for research, study, investigation, and experimentation; and (2) we do not apply effectively the knowledge we already have—the answer here is more and better trained health personnel.

Parenthetically, I might add that these problems are not confined to public health—they exist in all other technical fields. It appears that in technology of all kinds our plans have far outstripped our capacity to make them effective.

I have mentioned the obligations of every corporation to be a good neighbor, to promote the well-being of community institutions, and to participate within the limits of its capabilities in beneficial community activities. In order to discharge its obligations, an industrial enterprise must take an active interest in education, medical services, community development, cultural activities, and charitable works. Specifically, with respect to public health, I believe there are three important areas in which industry could be more helpful.

1. A greatly expanded cooperation between industry and the public health programs of the local community. We must recognize the complementary nature of inplant medical services and outplant public health services. They are noncompetitive and nonduplicative. I am told that health authorities agree that inplant medical activities offer important opportunities to study certain problems. They say that if they could study certain diseases in the mass they could make real progress and that inplant medical services are well adapted for such studies. We should proceed with a bold attack on this front in the hope that from such mass studies we will obtain knowledge which case-by-case studies have not provided.

2. We need an intensive study which will promote a more effective program of so-called "fringe benefits." It is no secret that fringe benefits, which add up to a substantial cost, have been accumulated in a haphazard manner. This is no criticism of labor unions or management. It is a statement of fact. If we could obtain accurate statistical data we could avoid many disagreements on objectives and methods, and provide greatly improved service to our employes, with little increase in cost.

3. We need research which will tell us how to reduce the cost of medical care without reducing its effectiveness. We have reached the point where we must take definitive action to teach people how to care for sick people at home, especially in chronic illnesses.

In all of these areas the lessons learned in industry can be applied outside the plant with the help of public

health organizations. Furthermore, industry has developed important skills in communications and public relations, the application of which to public health would be valuable in fostering greater public understanding and support for your work.

## Platform for Public Health Campaign

It seems to me that the work ahead resolves itself into a matter of effective leadership which could be furnished by the persons assembled here today. As an industrialist with a vital stake in community health, I would suggest for your consideration the following platform for an all-out campaign to improve public health practices:

1. Home rule—Government in the hands of the people back home, county health departments, decentralization of authority with commensurate responsibility.

2. Competence—Professionally qualified officials without political motivation.

3. Legislation—To give local communities freedom to act; to place policy decisions in the hands of skilled administrators; and professional decisions in the hands of professionals.

4. Problems of the aged—Research on industrial retirement practices to determine what should be done about "young men of 65" and "old men of 50."

5. Preventive medicine—The poet Longfellow reminded us, "Joy, temperance and repose, slam the door on the doctor's nose."

6. Self-help—Though good hospitals are essential for those needing hospital care, there is a vast area where rehabilitation home-care programs and other outside-the-hospital treatments can be effectively utilized.

7. Mental hygiene—May I suggest this concept: "Good mental hygiene has been attained when a person has learned how to lead a satisfying life regardless of his position, situation, or problems. Mental health can never be given. The individual has to work for it. As a result of the satisfactions he obtains in the process of working, he achieves good adjustment."

Here lies a great potential for serving the individual. It could mean favorable changes in attitudes, higher morale, better personal relationships, and mutual understanding and sympathy. I am encouraged to hope that the debilitating emotions of anxiety, fear, insecurity, and resentment could be replaced by their positive opposites—faith, courage, confidence, and good will.

It has been wisely said that the full development of a personality is dependent upon a mature emotional experience in four areas—work, worship, love, and play. This emphasis upon the value and dignity of work, meaningful and satisfying work, is a phenomenon peculiar to our American society and one which we must preserve, at all costs! In all these suggestions the common theme is that people should be helped to help themselves.

This program is only part of the work that needs to be done. The items have been selected merely because of their great urgency and because to attempt less would be to forfeit our right to leadership!

Science and medical research have devised and are devising many new weapons against disease. But these will be of little avail unless the mechanisms by which they serve the individuals in the community are effective. One such mechanism is the local health unit. The other is the interested industrial corporation. Working together, they can make the impact of the whole far greater than those of its parts, working separately. What an inspiring challenge all this is to those of us who believe that America is on the threshold of what could be a period of great spiritual and material progress, if only we are left free to solve our own problems and to work out our destiny as sovereign individuals under the rule of God!

# Where Are We Going in Public Health?

## A Labor Leader's Appraisal

LEONARD WOODCOCK

***Though the issues, as seen by management and labor are, as one would expect, radically different, there is a surprising and heartening unanimity in the ultimate goals of public health envisioned by both.***

Although we in labor are far removed from the technical problems and day-to-day operations of public health, the unions of America and the workers in public health have long been engaged in a common struggle against preventable disease and death. The primary concern of labor unions has been with the elevation of the economic status of the population. The resultant improvement in living standards—the gains in housing, in nutrition, in education—have been key elements in the improved health of the American people.

We in labor are aware of the tremendous contributions made by public health. Public health has made a valiant attack against the major threats to health. First came improvement of the environment—safe water, sanitary sewage disposal, improvement and protection of food, the provision of safe working places, and other measures to assure a safe and healthy environment. The battle against communicable diseases came next and public health turned to such individual health services as immunization, vaccination, and programs for the detection and treatment of tuberculosis and syphilis. Maternal and child health programs involving direct service to the individual also were developed. And public health administration is now turning to the chronic diseases which today comprise a major challenge in health.

There are those in America who are quick to claim all the credit for the phenomenal reduction in mortality in recent years. But we think this improvement flows from many sources—improved technology, advances in the economy and, in the scientific field, as Dr. C.-E. A. Winslow has pointed out, "our major advances have come from scientific research unrelated to the routine practice of medicine and from the operation of highly organized governmentally operated or financed programs."

I do not want to leave you with the impression that labor is entirely satisfied with the public health program of today. In fact, if I were to report on the aspect of public health with which I am in closest contact—industrial health—I would have to point out a definite tendency on the part of labor to look to the state labor departments, rather than to the health departments, for effective action. In part, this has been brought about by better cooperation which we generally receive from state labor departments. Lack of cooperation has, at times, gone so far as refusal by the public health department to make available to the union representatives the results of inspections that the union itself requested. But, more important, local unions find that health departments are simply not doing the job. Without exception, state health and labor departments do not have the staff needed to enforce statutory stand-

ards of occupational health and safety. In Michigan, for instance, investigations are usually made only on a complaint or request basis. The State Health Department's Division of Occupational Health is inadequately financed. The State Department of Labor has even less money for health and safety work, and, as a result, inspection of all places of employment in the state, which is required by law annually, is not carried out even once in five years on the average.

Essential information is being irrevocably lost because of a totally inadequate occupational disease reporting system. In Michigan, for example, where failure to report occupational diseases is a misdemeanor, there is serious underreporting and very little, if anything, is being done to correct the situation.

The President's Commission on the Health Needs of the Nation found that: "the study, control and prevention of occupational health hazards in the United States is not yet on a par with similar activities in other countries. Lack of recognition of the importance of certain industrial diseases, such as skin cancer, stands out in sharp contrast to the unrestricted and wide publicity given this important matter in England, Germany, and Switzerland where these cancers are notifiable and compensable diseases, and information regarding them, therefore, is relatively reliable.

"A great part of the weakness of our industrial health program," the President's Commission stated, "stems from the deep social and economic issues inherent in this field. The plain fact, for example, that the diagnosis of an occupational disease may cause expense to the employer, creates an atmosphere in which science often is subordinated to a desire to minimize or even to suppress knowledge which might prove the relationship of occupational environment to a disease." Only through an impartial publicly administered program can these issues be resolved fairly and in the public interest.

By default of public programs much of the leadership in industrial health has gone to private auspices. Those who are involved in the day-to-day operating decisions and those who conduct private studies have not always been able to extricate themselves from the conflict of interest described by the President's commission. As a result, there is a common tendency to minimize the extent of worker injuries—studies, for example, that attempt to show that loss of hearing is not harmful—perhaps is even desirable. There is a tendency to minimize the employer's liability for industrial injuries and disease, a tendency to exaggerate human factors in causing disability, and widespread suppression of information prejudicial to the employer's financial interest. To counter this, workers must exaggerate their disabilities and the employer's responsibility. This is an uneven struggle in which the employee usually comes out second.

We urgently need a stepped-up program of industrial health. We need improved standards publicly arrived at. We need active and disinterested enforcement of standards. We need responsibly conducted public research on the key problems of industrial health to determine the extent to which cancer, heart disease, and other major disabilities are work-connected. New studies are needed to keep abreast of the changing occupational environment which now exposes people to the risk of radiation and to the hazards of new chemicals and new materials. Improved reporting

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This paper was presented before the Association Symposium (Part I) of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 14, 1955.

and detection programs are needed.

While today's challenge to public health is greater than ever, labor people have the impression that public health is reluctant to tackle new problems. In years gone by, public health met head on the challenge of communicable diseases, although it has not been as courageous in tackling the problems of the occupational environment. In isolated instances physicians like Alice Hamilton provided determined leadership for community action in meeting the industrial hygiene problems of the day. These problems are going to be met. The question before this forum is whether public health will provide leadership to complete the pioneer work of the Alice Hamiltons?

Both labor and public health now face new frontiers in health. Labor unions have developed an interest in health far beyond that of occupational environment. Unions have contributed heavily to the vast growth of prepayment for health services in recent years. Today it is estimated that almost two-thirds of the population have some form of prepaid health protection. Under health programs negotiated by our union alone, over three million workers and dependents have hospitalization and medical coverage. The annual cost of these coverages is about $130 million. Usually the cost is split between the employer and the worker. The employer's share, however, is part of the worker's compensation; it is an item over which his union conducts collective bargaining and it is paid in lieu of increased wages. The union, therefore, has a vital interest in these prepaid health services—a responsibility to see that the worker gets his money's worth. Union negotiations for prepaid health services have only begun. There lie ahead major collective bargaining efforts to deal more effectively with the needs of our membership for more adequate health protection.

The leadership in prepayment, instead of coming from health oriented people, has been provided largely by insurance companies who have subordinated health to actuarial considerations; by insurance agents and brokers motivated primarily by sales; by organized medicine looking for some answer, however inadequate, to the pressures for national health insurance; by hospital organizations concerned mostly with revenue for the purveyors of the service.

Prepayment plans, as they exist in the medical care field, are generally not well designed to promote effectively the health of their subscribers. They overemphasize surgery and sometimes encourage unnecessary operations. They discourage, or exclude, preventive and diagnostic care. There are no adequate controls or standards concerning the quality of the health services furnished, the underwriting, and the actuarial and financial policies. The subscriber pays, but he has little voice in the operation of these mechanisms. Nor has he the professional competence to assay the services for which he pays. Moreover, the steady and continuing inflation in the cost of hospital and medical care has begun to reach alarming proportions. It is becoming evident that those who now control prepayment mechanisms—largely purveyors of service or commercial insurance companies—are not going to exercise the kind of medical controls that must operate if these prepayment systems are to work and to provide health care of high quality at reasonable cost to subscribers. Subscribers are coming to constitute a majority of the population. They are entitled to some measure of protection from government.

Are these efforts by the community to organize for the purchase of hospital and medical care a proper concern for public health? Even the earliest public health laws instruct the state board of health to "have the general supervision of the interests of the health and life of

the citizens of this state." The President's Commission on the Health Needs of the Nation has clearly expressed the only tenable contemporary position of Americans toward personal health services. The commission said, "we have accepted the principle that all persons should have access to comprehensive health services of high quality." And the commission recommended that, "the principle of prepaid health services be accepted as the most feasible method of financing the costs of medical care."

We in labor have long felt, and still feel, that the way to accomplish this objective is through a system of national health insurance. Those who feel that the same objective can be attained through the development of voluntary health insurance programs are now having their day in court. Despite our reservations, we have no choice but to give a fair trial to the so-called voluntary way.

When the practice of curative medicine was a relatively simple matter of treating out of the family doctor's little black bag there was some excuse for public health to ignore personal medical services in the press of fighting epidemics, establishing rudimentary sanitation programs, and developing the other basic public health services. But now that the science and art of medicine have progressed to the point where it takes complicated organization to furnish up-to-date service, the individual consumer cannot cope with modern medical care—its organization, its quality, its adequacy. The citizen is entitled to technical help from his government, especially in a matter as vital as health service.

Public health agencies are standing aside and not making their contribution toward the development of adequate general health care; especially are they derelict in failing to develop comprehensive preventive services. Public health has an inescapable responsibility concerning the quality of care. Public health agencies, for example, should set and enforce standards for the operation of hospitals. Not only do licensing laws need strengthening, but government should see that there is medical evaluation of the quality of care furnished.

There are far too few experiments with forms of medical organization like the Health Insurance Plan of Greater New York, the Kaiser Health Plan in California, and Windsor Medical in Ontario, which actually furnish comprehensive rather than fragmentary services. If we are to take seriously the public health mandate contained in the constitutions and the early laws of most of our states, public health officers should begin to concern themselves with personal health services.

I am not suggesting that the Public Health Service move in and take over operational responsibility for personal health care. Nor am I prepared to indicate the full extent to which their jurisdiction should reach. But I can say that at a minimum these are important areas where public health should now be active.

Public health should conduct programs of research on ways to organize and administer medical care and extend its scope to prevent illness, furnish rehabilitation, and guarantee that institutions and persons licensed to practice do indeed give high quality care. This represents one of the greatest challenges to public health today.

There will be those who say that the movement of public health into the field of personal health services represents the application of some alien philosophy. They may toss about phrases like "socialized medicine." But there is a long tradition in the United States of having government—local, state, and federal—set standards and operate controls for privately provided services for citizens. While they originally were thought to be infringing on liberty, we now accept

public control mechanisms to regulate utility charges, transport fares and freight tariffs, and the purity of drugs among many others.

The people are entitled to and are demanding modern medical care. Substantial numbers of our citizens believe they can get it through national health insurance or even governmentally operated health programs. In the long run the outcome will be determined by whether we make available broad, voluntary prepaid programs whose scope and quality is assured. The challenge to public health is to move into this field as a representative not of the healing arts professions, but on behalf of the citizens.

It seems to me that in his presidential address, Dr. Gaylord W. Anderson at the 1952 convention has thrown this challenge to you in public health, when he said: "Public health is an organized community program designed to prolong efficient human life. It has no artificial limitations that would restrict its activities to certain types of problems. It must deal with and endeavor to combat those forces that tend to impair or to shorten efficient human life and must meet each problem according to its particular needs. The essence of democracy is the concept of rule by the people, who have a right to protect themselves against all forces that lead to illness or to death. As public health workers and servants of the people we have been specifically instructed to 'take cognizance of the interests of health and life among the citizens.' If we neglect or fail to do so we will be derelict in our duty. I am confident as we look ahead to the duties we must assume in the future, we shall not fail."

The citizen needs help with a bewildering array of new health problems. Alone, he cannot cope with them. Law and tradition mark public health as the arm of government which can assure that the scientific and technical advances of modern medicine are extended to all our citizens.

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"Armed with new weapons, beginning with the antibiotic 'wonder drugs,' the physician and the public health officer have been able to bring curative and preventive medicine to communities all across the land. For example, with the advent of penicillin, deaths from rheumatic fever have declined 70 per cent. Influenza deaths have been reduced 63 per cent. In addition to human survival and happiness, these advances have made possible billions of dollars in increased national productivity and additional revenue for the state and federal governments. In 1952 alone, the federal Treasury profited by an estimated two hundred and thirty-four million dollars in income and excise tax receipts through the decline in the death rate since 1944."

(Excerpt from the address by Harry S. Truman, November 17, 1955, on the occasion of the annual presentation of the Albert Lasker Awards at the 83rd APHA Annual Meeting in Kansas City, Mo.)

# A Continuing Study of the Acquisition of Natural Immunity to Poliomyelitis in Representative Louisiana Households

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***A striking and significant finding of this intensive study of familial infection with poliomyelitis virus is the very high incidence among infants and young children—all infections being subclinical.***

Adequate explanation of the occurrence of the disease poliomyelitis requires a full understanding of the factors influencing the dissemination of poliomyelitis viruses as well as of the conditions which determine that infection will result in disease. Until the recent advent of tissue culture technics for detecting poliomyelitis viruses and demonstrating the presence of their corresponding specific antibodies, recognition of past or present infection was a cumbersome procedure. Retrospective information has been forthcoming recently with increasing frequency as serologic surveys have been conducted in various, often widely contrasting, populations [1–5] and, in a few instances, study of sera collected serially from population samples has yielded evidence as to the frequency of immunizing infections within defined periods of time.[6, 7] Such studies have shown, in general, that such factors as poor environmental sanitation, large families and low economic status favor the early occurrence of immunizing infections.[4, 8, 9]

Efforts to detect current infection by demonstrating the excretion of poliomyelitis virus have been largely directed toward persons having a defined relation to cases of clinically recognizable disease, and they have shown that the probability of harboring virus increases with proximity to known, overt cases and is maximal in child household associates of such cases.[10–18] While a few purely random stool surveys have been reported, there is only one reported attempt to observe a population sample at frequent intervals over an extended period of time; this involved a small group of 16 newborn Negro infants in South Africa who were followed for more than a year.[19]

A similarly prospective study involving 156 representative households was

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This paper was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

This work was aided by a grant from the National Foundation for Infantile Paralysis, Inc.

initiated in 1953 in southern Louisiana with the primary objective of determining when and under what circumstances the average individual acquires his immunizing infections. This study also has centered about newborn infants but has included in addition the household associates of these index infants. In an initial report as of the end of 1954, 65 infections in these infants were described.[20] The present paper will report, still in preliminary fashion, observations related to a total of 109 episodes of household infection involving as many index infants.

## Over-All Plan and Methods

As originally planned the study was to continue for at least five years. Clinical and epidemiologic information obtained during routine and special visits to the households was to be correlated with laboratory-derived information about the occurrence of infection as revealed by the examination of serum and stool specimens collected regularly from the newborn index children and on special occasions from other members of the households.

The composition of the original study group is indicated in Table 1. It was nearly evenly divided between three study areas, i.e., urban New Orleans and Baton Rouge (with low and high past incidences of poliomyelitis, respectively) and the semirural Evangeline area (with low past incidence of disease). Negroes, however, made up nearly half the group and were especially overrepresented in the Baton Rouge and Evangeline areas. The whites were divided on a family income basis using $3,500 per year as an arbitrary dividing

**Table 1—Distribution of Households in the Study Group (As of Termination of Recruitment) by Area, Race, Economic Status, and Family Size**

| Area | Number of Older Siblings | Number of Households of Indicated Race or Economic Status | | | |
|---|---|---|---|---|---|
| | | White Upper | White Lower | All Negro | Total |
| New Orleans * | 0 | 3 | 5 | 6 | 14 |
| | 1 or 2 | 13 | 9 | 7 | 29 |
| | 3 plus | 3 | 5 | 6 | 14 |
| | All | 19 | 19 | 19 | 57 |
| Baton Rouge † | 0 | 0 | 4 | 7 | 11 |
| | 1 or 2 | 8 | 5 | 9 | 22 |
| | 3 plus | 4 | 3 | 9 | 16 |
| | All | 12 | 12 | 25 | 49 |
| Evangeline Area ‡ | 0 | 1 | 1 | 8 | 10 |
| | 1 or 2 | 10 | 6 | 11 | 27 |
| | 3 plus | 0 | 2 | 11 | 13 |
| | All | 11 | 9 | 30 | 50 |
| All | 0 | 4 | 10 | 21 | 35 |
| | 1 or 2 | 31 | 20 | 27 | 78 |
| | 3 plus | 7 | 10 | 26 | 43 |
| | All | 42 | 40 | 74 | 156 |

* New Orleans includes the metropolitan area with a population of about 650,000.

† Baton Rouge includes all of East Baton Rouge Parish with a population of about 250,000.

‡ The Evangeline area comprises St. Mary's, Iberia, St. Martin's, and Lafayette Parishes with an aggregate population in 1950 of 160,003, including 77,834 urban and 82,169 classed as rural.

line. The Negro family incomes were comparable to those of the white-lower group but the degree of household crowding was greater. Small (one child) and large (four or more children) families were also underrepresented in all three areas. A bias of possible importance derives from the fact that, during recruitment, preference was given to families that seemed both cooperative and likely to continue residing in the study areas.

As each household was admitted, a family record was prepared containing information of future epidemiologic interest and base line sera were taken from all household members. Each month thereafter the household was revisited to obtain interval information and to collect specimens from the index child. Blood specimens during the first year were obtained by heel-puncture; thereafter, venapuncture from a cubital vein was usually possible. Early in 1954 and again in 1955 "annual" sera were collected from all family members to seek evidence of household infection which had not involved the index child. Specimens from the index children were examined on a current basis and evidence of infection, i.e., new appearance of antibody or isolation of virus, resulted in an immediate return to the household for further information and specimens from household and other indicated contacts. In the Baton Rouge and Evangeline areas this field work has been carried out largely by nurses attached to the local health departments, to whom we are deeply indebted.

All laboratory examinations have been by currently accepted tissue culture technics. Until the end of 1954, HeLa cell monolayer cultures were employed exclusively. Since then, monolayer films of monkey-kidney cells have been used for both virus isolation attempts and tests for neutralizing antibodies. Stools are routinely tested as 10–20 per cent extracts in saline, prepared by simple centrifugation (4,500 rpm for one hour) and cytopathic agents isolated are identified by neutralization with potent type-specific antisera furnished by Dr. H. A. Wenner. All stools previously tested and found "negative" in HeLa cells have been retested using the more sensitive kidney-cell cultures. Sera are screened in final dilution of 1:2 (venapuncture specimens) or 1:10 (heel-puncture specimens) against approximately 100 tissue culture doses of virus, using established prototype strains as described elsewhere.[18] When indicated, antibody titrations have been carried out using two culture tubes per serial fourfold dilution of serum.

The initial group of 156 households contained 161 index children including five sets of twins and 686 other, older members. As of August 31, 1955, there remained 141 households containing 624 older associates and 180 children being followed at monthly intervals of whom 144 were original index children and 36 were recently born siblings.

## Infections in Index Children

Through September, 1955, a total of 109 infections with poliomyelitis viruses had been experienced by the index children as indicated by seroimmune response. In three instances of children infected during the first six months of life it has not been possible to determine more precisely the time at which infection took place. The remaining 106 infections could be defined in time on the basis of virus isolation or the new appearance of specific antibody. The distribution of these infections by month of age, shown in Table 2, reveals several peaks, i.e., at 12, 16, 17, and 22 months, which are believed merely to reflect the fact that many of the infants were of about the same age during periods of relative abundance of virus in their respective communities. Special interest pertains to the 15 infec-

**Table 2—Distribution of Infections with Poliomyelitis Viruses in Index Children by Month of Age**

| Age in Months | Number of Infections | Age in Months | Number of Infections | Age in Months | Number of Infections |
|---|---|---|---|---|---|
| Unknown * | 3 | 11 | 6 | 23 | 5 |
| < 1 † | 1 | 12 | 10 | 24 | 3 |
| 1 | 0 | 13 | 4 | 25 | 3 |
| 2 | 2 | 14 | 5 | 26 | 2 |
| 3 | 2 | 15 | 4 | 27 | 1 |
| 4 | 3 | 16 | 9 | 28 | 2 |
| 5 | 1 | 17 | 9 | 29 | 1 |
| 6 | 3 | 18 | 2 | 30 | 0 |
| 7 | 1 | 19 | 1 | 31 | 0 |
| 8 | 1 | 20 | 1 | 32 | 0 |
| 9 | 4 | 21 | 3 | 33 | 0 |
| 10 | 6 | 22 | 10 | 34 | 1 |

* These occurred during the first six months of life but the precise month is not known.
† Virus was found in stool collected on the third day of life.

tions that occurred during the first seven months of life. Excluding the three infections occurring at an unknown but early age, only four infections (including one in a three-day-old infant) took place in the face of the demonstrated presence of persisting maternal antibody.

The data as to seasonal occurrence are shown in Table 3. Since the index children were being born into the study from April through October of 1953, the year 1953 contributed very little exposure experience. From the 1954 and 1955 data, however, it is evident that, while some appreciable risk of infection persists throughout the year, there is a significantly greater risk during the summer and early fall. Table 3 also indicates the distribution of infections by virus type. The chief points of interest are the predominance of type 3 virus in the 1953–1954 period and of type 1 virus in 1955. These findings were closely paralleled in the clinical cases from the study areas which yielded types 1, 2, and 3 virus, respectively, in 6, 3, and 8 cases in 1954 and in 11, 5, and 3 cases in 1955. The proportional

**Table 3—Distribution of Infections with Poliomyelitis Viruses in Index Children by Year and Calendar Month and by Virus Type**

| | Number of Infections in Month Indicated | | | | | | | | | | | | | Number of Infections with Virus Type | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | All | 1 | 2 | 3 |
| 1953 | | | | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 9* | 3 | 1 | 5 |
| 1954 | 0 | 0 | 1 | 0 | 3 | 7 | 20 | 8 | 7 | 10 | 3 | 2 | 61 | 9 | 23 | 29 |
| 1955 | 5 | 1 | 2 | 4 | 4 | 5 | 11 | 7 | | | | | 39 | 27 | 8 | 4 |
| All | 5 | 1 | 3 | 4 | 7 | 12 | 31 | 15 | 7 | 14 | 4 | 3 | 109 | 39 | 32 | 38 |

* Includes 3 infections, mentioned in Table 2, which could not be assigned to a specific month.

**Table 4—Distribution of Infections with Poliomyelitis Viruses in Index Children by Area, Year, and Virus Type**

| Year | Virus Type | Number of Infections in Area Indicated | | | |
|---|---|---|---|---|---|
| | | Evangeline | Baton Rouge | New Orleans | All |
| 1953–1954 | 1 | 3 | 1 | 8 | 12 |
| | 2 | 12 | 7 | 5 | 24 |
| | 3 | 12 | 11 | 11 | 34 |
| 1955 | 1 | 6 | 7 | 14 | 27 |
| | 2 | 0 | 7 | 1 | 8 |
| | 3 | 4 | 0 | 0 | 4 |
| 1953–1955 | All | 37 | 33 | 39 | 109 |

distributions of virus types in overt infections, thus, were not too different from those in our study group in the corresponding periods.

Area, year, and virus type are considered in Table 4. While over-all infections were nearly equally frequent in the three areas, there were possibly important differences in respect to virus type. Both in 1953–1954 and in 1955 the greatest number of type 1 infections occurred in New Orleans, while in 1955 types 2 and 3 infections were confined almost completely to Baton Rouge and the Evangeline areas, respectively. The relation of infections to race or economic status and to family size is shown in Table 5 in which are presented both the numbers of infections and crude rates which do not take into account variations in the periods of observation. The over-all risk of infection was greatest for Negro children. Perhaps because there were disproportionately few

**Table 5—Distribution of Infections with Poliomyelitis Viruses in Index Children by Race or Economic Status and by Number of Older Siblings ***

| Race or Economic Status | Infections in Children with Indicated Number of Older Siblings | | | | | | Infections in All Children | |
|---|---|---|---|---|---|---|---|---|
| | None | | 1 or 2 | | 3 or more | | | |
| | Number | Rate Per cent † | Number | Rate Per cent | Number | Rate Per cent | Number | Rate Per cent |
| Negro | 9 | 16 | 29 | 46 | 21 | 30 | 59 | 31 |
| White Lower | 5 | 19 | 12 | 21 | 9 | 25 | 26 | 22 |
| White Upper | 1 | 9 | 20 | 25 | 3 | 14 | 24 | 21 |
| All | 15 | 16 | 61 | 30 | 33 | 26 | 109 | 26 |

* Older siblings mean, in this case, other children under 15 years of age.

† Since nearly all of the infections recorded were in original index children, the rates have been computed using only the numbers of original index children as the bases for the denominators. Actually, since each child can experience three infections with different virus types, the denominators were obtained by multiplying the numbers of children by three.

first-born index children in the white-upper group, the over-all rates for the two white groups are not different. Finally, while the number of older siblings does not seem very important, it is clear that having one or more older (and presumably nonimmune) siblings materially increases the risk of infection.

Excretion of virus by infected index children deserves comment which, however, will be restricted to the 61 children infected during 1954, all of whose stool specimens have been completely examined. Poliomyelitis virus was isolated not at all from eight, on only one occasion from 17 and on two or more occasions from 36 children with a maximum interval of 64 days between first and last positive specimens. The average period of observed virus excretion for the 53 children actually yielding virus was 21 days. The true average period of virus excretion is probably much longer, perhaps 50 days, since specimens were collected usually at 30-day intervals. Also, in 20 instances, including five of the children from whom no poliomyelitis virus was obtained, a possibly crucial or limiting specimen yielded an untypable cytopathic agent which may have masked the presence of poliomyelitis virus.

## Infections in Household Associates of Index Children

The sera collected from the household associates on admission to the study and again in 1954 and 1955 have been screened for neutralizing antibodies. The results indicate that, in six instances, the index child escaped infection experienced by others in the same household. In these households, six out of a total of 16 homologously nonimmune other family members also escaped infection. In contrast, only four escaped out of 86 previously nonimmune persons in households in which the index child was infected during 1953–1954. Examination has been completed of single stool specimens taken soon after infection of the index child from 69 of these 86 persons and has revealed poliomyelitis viruses in 34 or 49 per cent. Another eight stools yielded possibly interfering untypable agents.

The response of previously immune household associates to identical conditions of exposure is in sharp contrast to the foregoing. While 31 (19 per cent) of 161 homologously immune persons presumably became reinfected during 1953–1954, since they responded to exposure with a significant antibody rise (usually much greater than fourfold), virus was found on only one occasion in the stool specimens collected from these individuals. It is also of interest that reinfection occurred chiefly in persons with low antibody titers (median titer 1:40) and that the range of post-reinfection titers (1:320 to 1:40,960) and the median value (1:2,560) are substantially higher than those we have observed following primary infection (range 1:20–1:5,120, median 1:320 to 1:640).

## Clinical and Epidemiologic Aspects of the Household Infections

Although there has been no clinically diagnosed case of poliomyelitis in the study group, histories of possibly significant minor illness were often obtained. Among 149 persons experiencing primary infection, including 67 index children and 82 associates for whom the records are complete, a history of minor illness at an appropriate time was elicited for 23 index children, 22 child siblings, and eight adult associates or about 36 per cent of the group. Fever was the single common denominator but headache, nausea or vomiting, sore throat and irritability were other common manifestations. In five instances a story of nuchal rigidity or muscle pain and stiffness suggested

possible CNS involvement but in no case was there major muscular impairment.

Evidence has already been presented in relation to the influence of such factors as season, area, race, or economic status, age, and family size upon the occurrence of infection. Unfortunately, efforts to trace the specific pathways by which infection gained entrance into specific households have not been highly rewarding. On two occasions possible links to cases of paralytic disease were uncovered: in one, the immune physician father had cared for a patient; and in the other, more probable instance a nonimmune sibling who became infected himself had contact with a case of overt infection with virus of the appropriate type. Investigations of only 56 household episodes have been completed in that all of the related laboratory work is finished. In 12 of these, histories of intimate contact with other households were obtained. All children in 11 contact households were shown to have antibodies for the homologous virus and some were found still shedding virus. In the final household, however, in spite of intimate daily contact, the single child escaped infection. Nonetheless, it would seem that intimate contact between households favors virus spread. The remaining investigations yielded no obviously pertinent information.

## Patterns of Seroimmunity in the Study Group

While the study group has serious deficiencies as a truly representative population sample, it does constitute a fairly good sample of the families with small children in each of the three study areas. In this light it is of interest to consider the type-specific seroimmunity of the household associates upon admission to the study in 1953 and the changes revealed by the results of screening sera taken from the same persons early in 1955. Persons no longer in the study in 1955 will not be considered, except

**Table 6—Seroimmunity to Poliomyelitis Viruses in Household Associates * of Index Children, by Age and by Virus Type, in 1953 and 1955**

| Age in 1953 (Years) | Number of Persons | Per cent of Persons Immune to Virus of Indicated Type in Indicated Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Type 1 | | Type 2 | | Type 3 | | Mean for All Types † | |
| | | 1953 | 1955 | 1953 | 1955 | 1953 | 1955 | 1953 | 1955 |
| 1 | 30 | 27 | 30 | 13 | 20 | 13 | 50 | 18 | 36 |
| 2 | 40 | 48 | 50 | 38 | 50 | 13 | 50 | 32 | 50 |
| 3 | 49 | 37 | 41 | 37 | 51 | 20 | 43 | 31 | 45 |
| 4 | 30 | 60 | 60 | 50 | 50 | 60 | 83 | 57 | 64 |
| 5– 6 | 59 | 70 | 78 | 64 | 71 | 78 | 86 | 71 | 78 |
| 7– 9 | 53 | 66 | 76 | 79 | 85 | 70 | 74 | 71 | 84 |
| 10–19 | 60 | 87 | 88 | 88 | 90 | 88 | 90 | 88 | 90 |
| 20–29 | 144 | 89 | 90 | 90 | 90 | 88 | 89 | 89 | 90 |
| 30 plus | 159 | 87 | 88 | 93 | 94 | 91 | 92 | 90 | 91 |
| All | 624 | 72 | 76 | 74 | 78 | 71 | 80 | 73 | 78 |

* Limited to persons still in study when 1955 sera were collected.

† Represents the average experience with a single type virus; computed by summing the number of persons in an age group immune to each type virus and referring this sum to a denominator equal to three times the total number of persons in the age group.

as noted, so that the 1953 and 1955 results can be compared directly.

Table 6 indicates the per cent of seroimmunity to each virus type by age for the group as a whole. With one important exception, the seroimmune patterns for the three virus types are closely parallel and show a fairly rapid rise to about 60 per cent by age four and 90 per cent in the age groups 10 years and older. In the interval between collection of the 1953 and 1955 sera (average of about 18 months) about 4 per cent of the population were infected with type 1 virus, the same proportion with type 2 virus, and about 9 per cent with type 3 virus. Nearly all of those infected were less than 10 years of age. The major lack of parallelism in the 1953 type-specific seroimmune patterns was in the group under four years of age which was seriously deficient in type 3 immunity. This is shown in graphic form in Figure 1 which depicts, for comparison, the age curves for type 1 and 3 immunity in the same younger individuals in 1953 and 1955. As the result of the predominance of type 3 infections in the 1953–1954 period the deficiency in type 3 immunity has been more than made up and there now exists a relative lack of type 1 immunity. This is of special interest in view of the predominance in 1955 of infections with type 1 virus.

**Figure 1—Seroimmunity to Types 1 and 3 Poliomyelitis Viruses in 1953 and 1955 Among Household Associates Under 20 Years of Age in 1953**

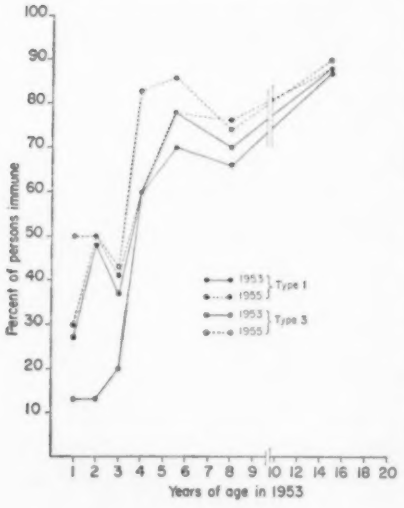
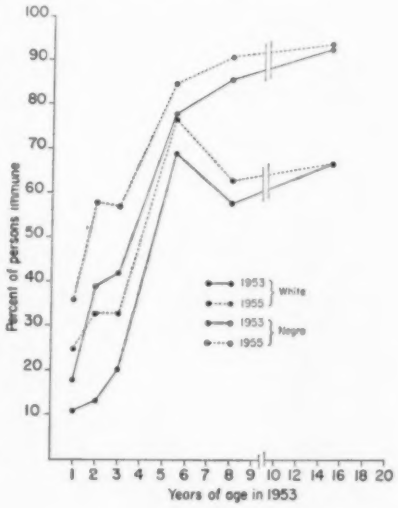



**Figure 2—Mean Seroimmunity to Poliomyelitis Viruses (All Types) in 1953 and 1955 Among Negro and White Upper Economic Household Associates Under 20 Years of Age in 1953**




In considering the relation of seroimmunity to race, economic status and area, mean values for immunity to the three virus types have been employed to simplify the presentation. In Table 7 the data for 1953 and 1955 are presented by race and economic status. From the 1953 figures it is evident that immunity developed most rapidly in the Negro group with the white lower-economic group following fairly closely and the white-upper group lagging well

**Table 7—Mean Seroimmunity to Poliomyelitis Viruses (All Types) † in Household Associates * of Index Children in 1953 and 1955, by Age, Race and Economic Status**

| Age in 1953 (Years) | White Upper Economic Group | | | White Lower Economic Group | | | All Negroes | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. of Persons | Per cent Immune in | | No. of Persons | Per cent Immune in | | No. of Persons | Per cent Immune in | |
| | | 1953 | 1955 | | 1953 | 1955 | | 1953 | 1955 |
| 1 | 12 | 11 | 25 | 7 | 29 | 43 | 11 | 18 | 36 |
| 2 | 8 | 13 | 33 | 9 | 33 | 44 | 23 | 39 | 58 |
| 3 | 14 | 21 | 33 | 15 | 27 | 42 | 20 | 42 | 57 |
| 4 | 7 | 38 | 48 | 7 | 76 | 76 | 16 | 56 | 67 |
| 5– 6 | 16 | 69 | 77 | 9 | 63 | 72 | 24 | 78 | 85 |
| 7– 9 | 19 | 58 | 63 | 15 | 71 | 78 | 19 | 86 | 91 |
| 10–19 | 6 | 67 | 67 | 21 | 86 | 89 | 33 | 93 | 94 |
| 20–29 | 37 | 78 | 80 | 46 | 89 | 89 | 61 | 95 | 96 |
| 30 plus | 61 | 85 | 87 | 34 | 92 | 93 | 64 | 95 | 95 |
| All | 180 | 64 | 69 | 173 | 74 | 78 | 271 | 79 | 84 |

See * and † as in Table 6.

behind. The relative positions changed very little by 1955 with each group experiencing about the same degree of change, i.e., an increase in immunity of about 4 or 5 per cent. The 1953 and 1955 data for the younger members of the contrasting Negro and white-upper groups are presented graphically in Figure 2. Not only had immunity developed more rapidly in the Negroes by 1953 but during an additional 18 months of experience the white-upper group failed to achieve immunity equal to that of the Negroes in 1953.

Because of the marked overrepresentation of Negroes in the Baton Rouge and Evangeline area groups, direct comparison of area figures is not warranted. In order to see the possible relation of area to seroimmunity, Table 8 was pre-

**Table 8—Mean Seroimmunity * to Poliomyelitis Viruses (All Types) in Initial Sera from All Participants † in Study Through June 30, 1955, Index Children Excepted, by Study Area, Race, and Economic Status**

| Study Area | Persons in Indicated Racial or Economic Group | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | White Upper | | White Lower | | Negro | | All Groups | |
| | Number | Per cent Immune | Number | Per cent Immune | Number | Per cent Immune | Number | Per cent Immune |
| New Orleans | 90 | 63 | 141 | 84 | 99 | 79 | 330 | 77 |
| Baton Rouge | 70 | 54 | 44 | 61 | 123 | 82 | 237 | 70 |
| Evangeline | 62 | 78 | 34 | 75 | 136 | 80 | 232 | 79 |
| All | 222 | 64 | 219 | 78 | 358 | 80 | 799 | 75 |

* See footnote 2 to Table 6.
† See text for explanation.

pared with separate figures for the three racial or economic groups in each area. Further, in order to increase the size of the populations to be compared, the figures are based on examination of the admission sera of all participants in the study other than index children, even though many are no longer under observation. Although age-specific figures have been omitted, it should be indicated that the distributions of the various groups by age are reasonably similar. While the figures for the Negro groups in the three areas are very similar, there are possibly significant differences between the corresponding white groups. Fitting well with the high past incidence of poliomyelitis in Baton Rouge is the fact that immunity in both white groups in that city is considerably less frequent than in the corresponding groups in either New Orleans or the Evangeline area. Also, the white-upper group in urban New Orleans has distinctly less immunity than the corresponding group in the semirural Evangeline area.

## Discussion and Summary

Since early 1953, about 150 representative households from three areas in southern Louisiana have been observed for an average period of 27 months in an effort to learn more about when and under what circumstances the usual immunizing infections with poliomyelitis viruses occur. Examination by tissue culture methods of stool and blood specimens collected monthly since birth from the index infant in each household has revealed the occurrence of 109 episodes of household infection. Six additional episodes in which the index child escaped were revealed by examination of sera collected annually from the other household members.

Analysis of the infections in index infants indicates that, while infections occur in the region under study throughout the year, there is a pronounced seasonal increase in late summer and early fall. However, all three virus types are not constantly and equally represented. In reviewing other similar evidence Sabin [21] has suggested that type 2 virus is usually endemically present whereas types 1 and 3 are present only "on certain epidemic occasions." Our data suggest that the cyclic occurrence of type 3 and type 1 virus may be conditioned by specific deficiencies in immunity among children under four years of age.

Our observations as to the patterns of seroimmunity in the over-all study group and as to the observed infections in the index children support concepts previously advanced as to the importance of economic status and family size to the early acquisition of infection,[4, 8, 9] i.e., infection occurs significantly earlier in Negro children and in children with one or more older siblings. Also, just as in families with cases of overt disease,[16–18] intra-household spread of these silent immunizing infections to all nonimmune members is the general rule.

This fact of generalized exposure within the household makes possible a unique opportunity to correlate naturally and actively induced seroimmunity with ability to resist infection. Our findings, in agreement with other data reviewed by Sabin,[21] indicate that reinfection is most apt to occur in persons with low antibody titers and that, when it does occur, it is not associated with prolonged, epidemiologically significant shedding of virus. Finally, while only four of 15 infections occurring in the first seven months of life took place in the face of demonstrated persisting maternal antibody, this cannot be taken to mean that maternal antibody protects against infection. Our still incomplete data indicate that maternally derived antibody does not persist for more than three months unless the maternal antibody titer was unusually high.

Although some evidence has been obtained for ready spread of virus between closely associated households as well as within households, no direct information has been obtained so far as to specific mechanisms of virus transmission. Also, no direct insight has been gained as to the conditions which determine that infection will result in disease. Among the index children and their nonimmune household associates an estimated 240 infections * have occurred during the period of observation with no instance of paralytic disease, although a history of minor febrile illness, possibly due to poliomyelitis virus infection, has been elicited in relation to about one-third of the verified infections. While there is a suggestive similarity in distribution of virus types among the household infections and the cases of overt disease, which occurred concurrently in the study areas, it remains possible that the household infections were caused predominantly by strains of low virulence. However, if one accepts the age-specific infection rates observed in our study group as applicable to the aggregate population of the three study areas (just over a million in 1950), there were in 1954 about 77,000 infections with 109 reported cases of paralytic disease or a ratio of one paralytic case per 710 infections with viruses of all types. In this light, absence of paralytic disease in our study hardly requires explanation.

## Addendum

Since this manuscript was prepared, a preliminary report [22] has been published of a very interesting study, similar in many ways to that described here, of the occurrence of poliomyelitis virus infections in about 200 households of United States Air Force personnel stationed in the Philippine Islands during a four-month period in 1953. While differences in objective, environment, and composition of the study groups render direct comparisons between the Philippine and Louisiana studies difficult, it is worth noting that in the Philippine study numerous infections with all three virus types were also observed unassociated with clinically recognized poliomyelitis.

* The estimate (based on 1.2 infections in household associates per infection in an index child) is necessary because examination of specimens collected from members of households infected in 1955 has not been completed.

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## Fellowships in Pediatric Neuropsychiatry

Pediatricians and psychiatrists are invited to apply for fellowships being offered jointly by the Department of Pediatrics, Ohio State University, and the Children's Hospital of Columbus. A Clinic of Child Development has been established jointly, which will concern itself with deviations from normal behavioral development in the preschool period. Fellows will have an opportunity to teach and to engage in research projects designed to throw light on the etiology of the neuropsychiatric disorders of childhood.

Fellowships will be granted for one year with a stipend of $5,000. The first will be available beginning July 1, 1956, and one is provided for each six months.

Further information from Dr. Earl H. Baxter, chairman, Department of Pediatrics, or Dr. Hilda Knobloch, associate professor of pediatrics and director of the clinic, Ohio State University, Columbus.

# Intestinal Viral Flora of Healthy Children Demonstrable by Monkey Kidney Tissue Culture

M. RAMOS-ALVAREZ, M.D., and ALBERT B. SABIN, M.D.

***Some of the complexities of laboratory support or confirmation of epidemiologic studies in poliomyelitis will be revealed in this exploratory research.***

Many viruses known to be responsible for specific diseases can occur in the alimentary tract of healthy individuals. Among those that may be mentioned are poliomyelitis, hepatitis, Coxsackie, herpes simplex, mumps, influenza, ARD (acute respiratory disease), or APC (adenoido-pharyngo-conjunctival) viruses. The poliomyelitis, herpes simplex, mumps, and some members of the Coxsackie and APC groups of viruses are known to produce cytopathogenic effects in monkey kidney tissue cultures. However, the use of monkey kidney tissue cultures has revealed the existence of a whole new group of viruses which have been encountered not only in routine tests on stools of patients with suspected poliomyelitis, but also in large numbers among healthy children.

The purpose of this communication is to present the data recently accumulated in our laboratory on the viruses recovered by means of monkey kidney tissue cultures from the rectal swabs of 3,337 healthy children in this country and in Mexico. Thirty-one strains were recovered from the 1,566 specimens obtained from children aged one to 17 years during July and August, 1953, in Cincinnati,[1] and 334 strains from the 1,771 specimens obtained from children aged one to four years during June, 1954, in Mexico City and Veracruz.

Table 1 shows the frequency of poliomyelitis and other viruses recovered from children of different ages in Cincinnati. Table 2 shows the comparative incidence of poliomyelitis and other viruses among the one- to four-year-old children in Cincinnati, Mexico City, and Veracruz. Although the children in all

**Table 1—Incidence of Poliomyelitis and Other Viruses in Rectal Swabs of Healthy Children of Different Ages in Cincinnati, Ohio**

| Age Group Years | No. of Children Tested | Poliomyelitis Viruses Per cent | Other Viruses Per cent |
|---|---|---|---|
| 1– 4 | 154 | 0.6 | 5.2 |
| 5– 9 | 537 | 0.3 | 2.6 |
| 10–14 | 683 | 0.2 | 0.2 |
| 15–17 | 154 | 0 | 0 |
| Unknown | 38 | 0 | 3.4 |
| 1–17 | 1,566 | 0.3 | 1.6 |

(Reproduced from Ramos-Alvarez, M., and Sabin, A. B. Proc. Soc. Exper. Biol. & Med. 87:655–661, 1954.

Dr. Ramos-Alvarez is research associate, and Dr. Sabin is professor of research pediatrics, Children's Hospital Research Foundation, University of Cincinnati College of Medicine, Cincinnati, Ohio.

This paper was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

This study was aided by a grant from the National Foundation for Infantile Paralysis.

**Table 2—Incidence of Poliomyelitis and Other Viruses Among One to Four-Year-Old Healthy Children in Cincinnati and Mexico**

| City | No. of Children Tested | Poliomyelitis Viruses Per cent | Other Viruses Per cent |
|---|---|---|---|
| Cincinnati | 154 | 0.6 | 5.2 |
| Mexico City | 1,491 | 3.4 | 15.6 |
| Veracruz | 280 | 8.2 | 10.0 |

considerably in climate during the month of June—Veracruz, at sea level, is hot and humid, whereas Mexico City, at about 7,000 feet above sea level, is warm and dry.

The data shown in Table 4 indicate that among the poliomyelitis viruses recovered during these particular non-epidemic years in Mexico and Cincinnati, Type 1 was only rarely encountered and Type 3 predominated. To obtain some idea of the quantities of

**Table 3—Incidence of Poliomyelitis and Other Viruses in Rectal Swabs of Healthy Mexican Children by Individual Years in One to Four-Year Age Group**

| Age Year | Mexico City | | | Veracruz | | |
|---|---|---|---|---|---|---|
| | No. Tested | Poliomyelitis Per cent | Other Viruses Per cent | No. Tested | Poliomyelitis Per cent | Other Viruses Per cent |
| 1 | 431 | 4.4 | 17.8 | 34 | 11.7 | 8.8 |
| 2 | 460 | 3.6 | 16.3 | 56 | 12.5 | 16.0 |
| 3 | 311 | 3.2 | 12.5 | 54 | 7.4 | 16.6 |
| 4 | 289 | 1.7 | 14.5 | 136 | 5.8 | 5.2 |
| 1–4 | 1,491 | 3.4 | 15.6 | 280 | 8.2 | 10.0 |

three cities derive from the lowest economic groups, it is evident that the incidence of these viruses was much higher in the Mexican cities than in Cincinnati. Table 3 shows the incidence of these viruses by individual years among the one- to four-year-old children in Mexico City and Veracruz. Most noteworthy is the approximately 12 per cent carrier rate of poliomyelitis viruses among the one- and two-year-old children in Veracruz. Although the poliomyelitis carrier rate was found to be much higher among all one- to four-year-old children in Veracruz than in Mexico City, the total carrier rate for viruses recovered by monkey kidney tissue cultures was not significantly different in these two cities which vary

poliomyelitis virus that may be present in the relatively minute amounts of feces picked up by the rectal swabs titrations were performed on 56 of the Mexican specimens. The data shown in Table 5 indicate that in approximately half the swabs the amount of virus was in excess of $10^3$ $TCD_{50}$ and occasionally as high as $10^5$ to $10^{5.9}$ $TCD_{50}$.

**Table 4—Incidence of Each Type of Poliomyelitis Virus Among 78 Strains Isolated from Healthy Children**

| City | Type 1 | Type 2 | Type 3 |
|---|---|---|---|
| Mexico City | 4 | 9 | 37 |
| Veracruz | 0 | 7 | 16 |
| Cincinnati | 0 | 3 | 2 |

**Table 5—Quantitative Determination of Poliomyelitis Virus in Rectal Swabs from 56 Healthy Mexican Children**

| Type of Virus Recovered | No. of Rectal Swabs Tested | No. of Rectal Swabs Containing Indicated Log $TCD_{50}$ of Virus | | | | | |
|---|---|---|---|---|---|---|---|
| | | $< 10^1$ | $10^1$–$10^{1.9}$ | $10^2$–$10^{2.9}$ | $10^3$–$10^{3.9}$ | $10^4$–$10^{4.9}$ | $10^5$–$10^{5.9}$ |
| 1 | 4 | 0 | 0 | 2 | 0 | 0 | 2 |
| 2 | 10 | 0 | 0 | 4 | 3 | 3 | 0 |
| 3 | 42 | 2 | 3 | 18 | 13 | 3 | 3 |
| 1 + 2 + 3 | 56 | 2 | 3 | 24 | 16 | 6 | 5 |

## Characteristics of the Nonpoliomyelitis Viruses

Among the 26 nonpoliomyelitis viruses recovered from the Cincinnati children only one proved to be pathogenic for suckling mice and by serologic tests was identified as a Coxsackie, Type $B_4$. The remaining 25 viruses were found to belong to five distinct antigenic types. In view of the possibility that some of the naturally occurring Coxsackie viruses may not be pathogenic for suckling mice we tested our five distinct prototype viruses with antisera against the five Group B (Types 1–5) and seven Group A (Types 7, 9, 11, 13, 14, 15, and 18) Coxsackie viruses which have been found to produce cytopathogenic effects either in monkey kidney or HeLa cell cultures, or in both. All these Coxsackie antisera were kindly supplied by Dr. Gilbert Dalldorf and were used in a dilution of 1:5 in the neutralization tests, but none neutralized 100 $TCD_{50}$ or less of our five new prototypes. It was also established that our five prototype viruses are different from the six reported [2] and unreported antigenically distinct "orphan" viruses ("Farouk," "Cornelis," and "Morrisey," "Pesascek," "Noyce," and "D'Amori") currently available in Melnick's laboratory, from the "Mack" and "Kentucky" strains of Steigman,[3] and the 2, as yet unreported, antigenically distinct viruses ("2–85" and "2–188") recovered by Hammon in the Philippines.[4]

In cynomolgus monkey kidney tissue cultures our Types 1, 2, 3, and 5 produce cytopathogenic effects which are indistinguishable from those exhibited by the poliomyelitis viruses. The Types 3 and 5 viruses had longer incubation periods in the initial passages, but after four passages in tissue culture they produced the cytopathogenic effect as rapidly as the others. Our Type 4 virus can be distinguished from all the others, as well as from the poliomyelitis, herpes, and mumps viruses, by the distinct cytopathogenic effect, consisting of a clumpy degeneration of the cells which characteristically appears after an incubation period of from two to ten days depending on the amount of virus.

It is noteworthy that only the Type 4 virus was capable of producing a cytopathogenic effect in cultures of kidneys derived from Cebus capucinus monkeys, which were resistant to standard strains of the three types of poliomyelitis virus as well as to our four other prototypes. We have been informed by Drs. Irving Gordon and William Jordan that our five prototype viruses can be propagated in HeLa cells, although the yield of virus is low. We have also been told by Dr. Robert Huebner that our five prototype viruses do not belong to the APC group and by Dr. Robert N. Hull that they are distinct from the cytopathogenic agents that he recovered from normal monkeys. It

should be noted here that human gamma globulin was found to contain antibody for all but our Type 2 prototype virus. However, antibodies for the Type 2 viruses have been demonstrated in individual human sera and its absence from gamma globulin in titers of 1:100 or more appears to be a reflection of the low incidence or low titers (or both) of antibody against this particular type.

Our five new prototype viruses are not pathogenic for suckling mice nor for adult mice by the intracerebral or spinal routes. They are not pathogenic for rabbits by the intracutaneous, intramuscular, or intravenous routes. The Types 1, 2, and 3 viruses were not pathogenic for cynomolgus monkeys by the spinal route but antibody developed as a result of the inoculation. All five prototype viruses pass gradocol membranes with an APD of about 300 mμ, but only the Type 4 virus has been tested more completely and found to have a size of about 60 to 90 mμ.

The frequency distribution of our five prototype viruses among the nonpoliomyelitis cytopathogenic agents recovered from healthy children in Cincinnati and Mexico is shown in Table 6. It is noteworthy that the Type 1 virus, representing 32 per cent of the Cincinnati strains, was not found at all among the 261 Mexican strains, and that the Type 2 virus, with an incidence of 44 per cent in Cincinnati, constituted only 8.1 per cent of the Mexico City strains. On the other hand, the Type 5 virus which had the lowest incidence in Cincinnati in 1953 had the highest incidence in Mexico City in 1954. It is, furthermore, noteworthy that only Type 5 virus was found in Veracruz and that only in an incidence of 7.1 per cent. Preliminary neutralization tests on the unclassified Mexican strains using pools of Coxsackie, as well as of five Melnick and two Hammon prototype antisera, indicate that the incidence of Coxsackie viruses is very low and that about 90 per cent of the strains still remain unclassified.

Only preliminary serologic surveys have thus far been carried out on the incidence of infection with the five Cincinnati prototype viruses among human beings. The results shown in Table 7 indicate that among the 61 Cincinnatians the incidence of antibody was much higher among those 20 to 30 years of age than among those one to five years of age. It is of interest that the total incidence of antibody among 19 children from India, mostly under four years of age, was as high as among those 20 to 30 years of age in Cincinnati. It is, furthermore, noteworthy that only 3 per cent of the Cincinnatians had

**Table 6—Incidence of Each of the Five Types of Cincinnati "HE" Viruses Among the Nonpoliomyelitis Cytopathogenic Agents Recovered from Healthy Children in Cincinnati, Mexico City, and Veracruz**

| "HE" Virus Type | Cincinnati 25 Strains Per cent | Mexico City 233 Strains Per cent | Veracruz 28 Strains Per cent |
|---|---|---|---|
| 1 | 32 | 0 | 0 |
| 2 | 44 | 8.1 | 0 |
| 3 | 12 | 2.6 | 0 |
| 4 | 8 | 1.3 | 0 |
| 5 | 4 | 15.4 | 7.1 |
| Unclassified | 0 | 72.6 | 92.9 |

**Table 7—Incidence of Neutralizing Antibodies for Five Types of Cincinnati "HE" Viruses Among Human Beings in Cincinnati and India**

| Population | Age Group Years | No. Tested | Per cent Positive for Indicated Type of "HE" Virus | | | | | Per cent Positive for One or More Types | Per cent Positive for All 5 Types |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | | |
| Cincinnati | 1–5 | 31 | 13 | 6 | 29 | 10 | 13 | 48 | 0 |
| | 20–30 | 30 | 30 | 13 | 40 | 63 | 40 | 87 | 3 |
| India | 1–4 | 19 | 53 | 10 | 37 | 26 | 42 | 84 | 5 |

antibody against all five types by 20 to 30 years of age.

The ultimate significance of these new viruses in the etiology of human disease still is a problem for future study. It is clear, however, that they are not the viral counterpart of the normal bacterial flora of the human enteric tract because they are found most frequently during the early years of life, and at least in Cincinnati were found only rarely after the 10th year of life. Some of the "orphan" viruses recently recovered by Melnick and his associates [5] from the stools of patients with a diagnosis of either nonparalytic poliomyelitis or the aseptic meningitis syndrome were found to be identical with our Types 1 and 3 prototype viruses and their relation to this type of illness must be investigated further. One of us (A.B.S.) recently found that a virus that was associated with an epidemic of rhinitis in chimpanzees, as well as another virus that was associated with a family outbreak of an acute "steatorrheic" enteritis were antigenically related but not identical with the Cincinnati Type 4 virus.

This observation suggests that at least some of the new viruses, which are demonstrable by monkey kidney tissue culture in the human enteric tract, may ultimately prove to be related to infections of both the respiratory and enteric tracts.

## Appendix

Since presentation of this paper, the so-called "orphan" and HE viruses have been grouped together under the name of ECHO (enteric cytopathogenic human orphan) viruses [see Science (Dec. 16), 1955, 122:1187–1188]. In accord with this new classification the five Cincinnati HE viruses are now known as ECHO viruses, Types 7 to 11.

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# An Appraisal of Medical Care in Group Health Centers

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***Offered here is a broad background of experience from which the effectiveness of group practice-prepayment health plan is critically evaluated.***

The year 1955 marks the end of a decade of significant effort toward the provision of prepaid medical services through group practice in health centers. The need for periodic appraisal of the experience to date is as compelling in this field as it is in every other area of social endeavor. This joint session of those most actively participating in the group health center movement, therefore, provides a singularly appropriate time and place for such self-evaluation.

There has been some tendency—understandable in the early enthusiasm of a pioneering field—to describe one's own program as it ought to be, rather than as it is. This is a disservice to those facing the problems of new projects, who should be able to recognize past mistakes and differentiate them from more successful experience. The existing gap between promise and practice in group medical care cannot be closed until it is recognized.[1]

It should be made clear, however, that the group practice health center method represents, in the author's opinion, a decided advance over traditional solo practice, fee-for-service patterns, as far as organized prepayment plans are concerned. This sometimes critical analysis is presented only in the effort to direct attention to the opportunities for constructive action in the future.

## Types of Group Health Centers

Any general analysis should clearly differentiate the rather dissimilar types of health centers now operating. A number of independent prepayment plans have been organized by consumer cooperatives, private medical groups and industry to provide general medical services to members through their own health center facilities. A separate category should be made for the two multiple-unit metropolitan giants—Kaiser-Permanente and the Health Insurance Plan of Greater New York (HIP)—whose special characteristics dominate any over-all pattern. Equally distinctive is the third group, the labor health centers. With a few notable exceptions, these union or union-management programs have developed as diagnostic or ambulatory care clinics, primarily for the worker, seldom undertaking full family health service.

The hazards are obvious, therefore, in dealing with over-all trends. This discussion will, however, suggest those general factors which appear to be significant in the experience of the decade.

## Achievements of the Health Center Movement

It is necessary, at the outset, to recognize the solid achievements of the various centers. The main values have been those of demonstration and education, rather than of solution of health problems for any large segment of the population. Most important has been the demonstration that group prepayment and group practice can be har-

monious components of medical care—each enhancing the potential of the other. Second, widening of the scope of prepaid service to include early care in home and office, as well as hospital care, has been shown to be possible, through the organizational efficiencies of the group health method. Third, the real basis for economy in health insurance has been shown, since many of the group centers have been able to offer considerably greater benefits per premium dollar than the fee-for-service solo practice plans. Fourth, the potential for improved quality of care has been enhanced by the concept of medical teamwork in fully equipped facilities—although it must be stressed that this quality potential is not automatically realized. Finally, there has been evidence that democratic control of policy is applicable to the medical care field, so that the notion that only doctors, hospital administrators or insurance agents can provide leadership on the planning and policy levels has been effectively discredited.

A significant expression of the impact of the movement to date is the recent comment of a study committee of the American Medical Association: "The evolution of the health center may well be looked upon as one of the significant developments in medical care of the century." [2]

## Major Problems of the Decade

Tremendous emphasis has been given in the public health literature over the past decade to the theoretical advantages of group prepayment in association with group medical practice. The potential for rapid growth seemed enormous, once the initial demonstration projects were under way. On the basis of past experience with voluntary insurance plans and with public and private medical clinics, great expectations arose.

Inadequate Program Patterns—The road has turned out to be a fairly bumpy one, however, and progress somewhat slow. An exceedingly small segment of the population has been enrolled in group health center plans. Limited aspects of service and inadequate forms of organization have emerged. Significant new patterns, designed specifically for continuous family health service, have only rarely developed.

In some ways, the original models have had restricting influences. The Mayo Clinic, for example, is a fine referral and research center, but its highly developed pattern of specialization and its emphasis upon the unusual in diagnosis are not really applicable to the day-to-day family care responsibilities of prepaid health centers. On the other hand, the earliest labor health center organized 40 years ago in the sweatshops of the garment industry, is not necessarily a good model for more recent union efforts—as far as its design of limited service, part-time staff, and exclusion of dependants is concerned.

Limited Support by Labor—No really lively interest in health centers has been expressed by the public in general nor the labor movement in particular. Despite the phenomenal development of union health and welfare plans during the postwar decade—with the availability of enormous amounts of medical care money—labor has turned primarily to commercial insurance plans. A relative handful of local unions have ventured into the health center field—usually on an extremely restricted basis—and even these centers have remained minor factors in the total welfare fund

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This paper was presented before a Joint Session of the Association of Labor Health Administrators and the Medical Care Section of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 16, 1955.

program of the union.* The major interest of the labor movement has been in financing rather than organization of medical care. We have failed, I think, to sell the essential health purpose of group prepayment.

Union enrollment in the large Kaiser and HIP programs has been an exception to the commercial insurance pattern, in those communities where local facilities have been available. Certain recent trends, however, emphasize the ambivalent reactions of even these labor groups. In both these plans, certain enrolled union groups are calling for so-called dual choice arrangements, whereby private, fee-for-service prepayment plans are to be retained as an alternative to the center service. In some instances, membership dissatisfaction threatens total group withdrawal from the health center plan. A significant number of health center members —most difficult to tabulate—seek private physicians' care, despite the double payment involved. Innumerable explanations come immediately to mind for all this, but these manifestations of "consumer" dissatisfaction or, perhaps, inexperience, should alert us to discard any general complacency.

Professional Difficulties—At the same time, professional reactions have not fully lived up to early expectations. The opposition of organized medicine continues to plague both new and existing health center programs. Although some 2,000 physicians are associated with the various centers, profound problems continue to exist with respect to their proper orientation and professional conduct. Relatively high rates of turnover of physicians in some of the group health plans express one aspect of the difficulties of staff adjustment. And, in important contrast to the irrational and emotional attacks of some representatives of organized medicine, there remain many quite sincere members of the medical profession—drawing upon a long and honorable tradition in the control of medical irregularities—who are as honestly concerned with poor quality in group centers as in private practice.

Both cause and effect of such problems is the fact—difficult for us to admit—that the health center programs have frequently failed to realize their own potential for improved quality of care. How dramatic are the qualitative differences between group and solo practice? To what extent has the experience of members and physicians in health centers produced really enthusiastic supporters of this method? How many members are held by the obvious economic benefits, despite indifferent standards of service? Our analysis must come to grips with such issues.

## Growth Rate of the Health Center Movement

The over-all rate of growth of group health centers has been relatively slow. This is in contrast to the rapid increase during the past decade of enrollment in voluntary prepayment plans in general, and to the even more explosive expansion of union-management health and welfare programs.

All plans providing some kind of medical (as distinct from the usual hospital-surgical) benefits have expanded in membership from about five million in 1945 to a 1954 total of some 47 million.[3] During this same period, the number of workers covered by negotiated health and welfare plans has increased more than twentyfold to over 11 million, plus about half that number of dependents.[4] By comparison, the increase in comprehensive, direct service plan membership has been only from some three million in 1945 to less than four million today.[5]

* A recent exception is the hospital-health center program of the United Mine Workers Union Welfare and Retirement Fund.

There are currently about 140 group health center prepayment plans, involving some 174 separate clinics, including the labor health centers. Only 72 of these group clinics (of which 30 are affiliated with HIP) have been organized since 1945. The total membership is still under three million, and two-thirds of this number are enrolled in centers which were established before the start of the decade.[6]

Actually, most of the increase during the decade is accounted for by the rapid expansion of the two coastal plans, Kaiser-Permanente and HIP—each with nearly one-half million members. Aside from these two the increment of growth over the decade has been surprisingly small.

In 1945 there were only six labor health centers, as against some 40 now operating. But the total number of persons covered in 1954 was only 650,000 or so—if we exclude (as we should) the large United Auto Workers Union membership in Detroit, who were only nominally covered by the union's diagnostic institute.[7] *

There is much current activity on the labor health center scene, it is true, with a number of group centers arising in the United Mine Workers program, new local union clinics opening in Toledo, Chicago, Baltimore, and Washington, and much blueprinting on the West Coast. But the over-all response of the labor movement has been unexpectedly cautious.

## Utilization of Health Center Services

A different index for appraisal is that of the rate of utilization of health center services—which reflects the experience of those already enrolled. Available data suggest two different patterns. In most of the limited-service labor health centers, only 25–30 per cent of members used the center during a survey year, and less than two physician visits per eligible member per year were rendered at the center.[9] By contrast, programs such as the Labor Health Institute in St. Louis, and other community-sponsored centers which offer more comprehensive services to union members, showed an annual utilization rate of some 75 per cent of members and a ratio of physician visits at the center of around four per member—or about twice as much.[10]

The central question is, of course, why? What are the major factors in the experience of the decade which may help us to understand—and, perhaps, thereby to remove—the sources of qualitative inadequacy reflected in these problems of public and professional hesitation, slow growth and limited utilization? There may be some value in distinguishing between those influences "externally" imposed, as against those factors intrinsic to the form or content of the health center program itself.

## External Factors Affecting Health Center Programs

Economic and Political Issues—No evaluation of a social movement is meaningful without reference to the political and economic environment within which it develops. Unfortunately, the past decade has been one in which the huge costs of hot and cold wars have depleted public resources and energies potentially available for health programs. The general political climate has been one in which social experimentation and departure from established patterns have been effectively discouraged. In one sense, this is paradoxical, since the rapid expansion of labor-management welfare fund agreements has

* Since 1954, new plans for group diagnostic service to UAW Union members are under way in association with a Detroit hospital center.

been a striking postwar phenomenon. But much of this has emerged as a pattern of strong vested interests by individual unions in "their own" health and welfare plans, with consequent weakening not only of the potential for joint union planning in medical care, but also of labor support for community-wide health service proposals.

Financial barriers of serious proportions have imposed special restrictions upon health center development, despite the enormous sums of money negotiated in welfare trust funds—most of which is expended in commercial insurance contracts. Even where union health centers have been organized, welfare funds are often not applicable to the large costs of capital construction and equipment. At times, the allocations for health center services are actually too meager to sustain an adequate program—despite the huge amounts concurrently expended on indemnity-type insurance policies by the same union. Obviously, these labor-management funds are not available to the vast rural and nonunionized population. The implication remains that some method of public as well as industrial financial assistance will be needed if the health center concept is to be generally extended.

"Consumer" Factors—Traditional cultural patterns in the receipt of medical care create definite resistance to change among the general population. The average family is poorly informed regarding the technicalities of health insurance, and has little first-hand experience with the newer concepts of group practice. A major problem of consumer-sponsored plans is that of finding board members with adequate knowledge and understanding.

In this connection, the inexperience of the average worker with prepaid medical centers leads to one of the most important reasons for the distrust and rejection of these plans. The only concrete experience along these lines that many working people have had is in the charity clinics of public and private agencies. They quickly relate the health center idea to the memory of hard benches, long waiting periods, rushed and impersonal doctors, degrading means test procedures—which they now associate with all clinics. Small wonder that many often reject what appears to be a backward step! Quite understandable is their desire to win for themselves, through their unions, the right to obtain care in the well appointed private office. And, unfortunately, the difference in quality of care between the group center and the solo office is not always a convincing one.

There is a profound lesson to be learned here—that the real-life experiences of people determine their reactions to medical care proposals far more directly than do our professional (and often somewhat idealized) projections. It is all the more important, therefore, that the initial demonstrations in this field adhere to extremely high standards of service.

Professional Factors — Established patterns of professional work impose even more difficult barriers to the health center movement. As the sociologist Koos has recently demonstrated,[11] physicians come predominantly from the middle and upper social classes and, to some extent, are removed from the needs and attitudes of most of the working-class health plan membership. Their subsequent training as technically-oriented, disease-minded therapists leaves too little understanding of the concepts of a family health conservation service. Then, the prevailing pattern of private, competitive, solo, fee-for-service practice is a conditioning force hard to reconcile with the group center principles of teamwork, "consumer" responsibility and professional supervision.

Whatever the reasons, the response of the medical profession to the require-

ments of the health center movement has been characterized by (1) an "official" opposition, (2) a widespread lack of interest on the part of most physicians, and (3) a fairly difficult adjustment for that minority which has participated in the centers.

No phase of the health center movement has been wholly free of the harrassment of professional sanctions: reprisals against participating physicians, denial of hospital privileges, legal injunctions, public condemnation and a variety of legislative restrictions. It is not always remembered that in 28 of the 48 states there are laws restricting the establishment of consumer-sponsored health centers—usually through various technics of medical society control.[12]

While medical societies vary in the extent and degree of their hostility, it appears to be a universal expectation among consumer groups that they will never help. A recent American Medical Association statement on union health centers, however, gives hope for some change in this basic policy: "Health centers are experiments in new ways of providing non-occupational medical care, which should have all the benefits of counsel from the medical profession." [2]

Such, then, are some of the "external" factors which have characterized the environment of the health center movement during the past decade. It is only within this framework that valid appraisal can be made of the quality of medical care in the centers themselves. For whatever the internal problems, great credit is due all the pioneer programs for successful perseverance in the face of great odds.

## "Internal" Problems of Health Center Plans

The number of important problems involving the form and content of existing health center plans is, obviously, too large for adequate discussion in one paper. It must suffice to outline briefly those aspects which, in my own experience, seem important in relation to quality of care, and then to concentrate upon that most significant area—namely, the physician-member relationship. Accordingly, I would list the pertinent items beyond the scope of detailed discussion as follows:

1. The scope of medical benefits is frequently too restricted, especially in the labor health centers. Of the 140 group center plans surveyed by the Social Security Administration in 1954, only 35 could be found under any type of sponsorship which offer anything approaching comprehensive services.[5b] Among the 40 or so labor health centers, less than a dozen provide for general health needs. Utilization data show how restricted is the participation of eligible members in those centers with the more limited service structures. The number of physician hours scheduled at the center per eligible member is four times as high in the St. Louis Health Institute, for example, as in the ILGWU center in New York.[9]

2. Family dependent coverage is often lacking or curtailed, again primarily in the union-sponsored programs. Dependents make up less than one-third of all health center enrollment—although they comprise in general some 75 per cent of the average worker's over-all medical costs.[13]

3. Deficiencies of administrative organization compromise the quality of patient care. Long waiting periods, inconvenient office hours, inadequate provision for care of urgent cases outside of the regular schedule, negligence regarding the amenities of appointment and reception—these are some of the preventable causes of membership complaint. The excellent survey of membership attitudes which was made recently at the St. Louis Labor Health Institute reveals dissatisfactions on these

levels in even one of the best programs.[14]

4. Despite the fine slogans, effective technics for consumer control of broad policy and professional independence in medical matters are difficult to combine. Real problems of democratic selection, balanced voting strength, and qualifications for board members still face even the cooperative and labor union programs. Among the eminent "civic leaders" or the industrial directors of the two largest group plans, for example, representation of dues-paying members is hard to find.

5. Excessive size of individual health centers tends to diminish the quality potential of group practice. Obvious consequences include impersonal service, overdepartmentalization, loss of ease of informal consultation, absence of personal responsibility toward the program by both doctors and members. Recently, Yerby and Yurchenco of HIP have well described the organizational advantages of moderately-sized center facilities.[15] Highly specialized services need not be maintained in each family care unit, but can be effectively supplied to many affiliated facilities from a centrally organized resource.

6. Duplication of independently-operating health centers in the same community creates unnecessary waste and inefficiency. Our 1952 survey of labor health plans (not centers) in San Francisco illustrated the highly fragmented situation that obtains in most urban communities.[16] Currently, multiple, independent health centers are arising to service union members in New York City, Philadelphia, Chicago, and Los Angeles—with no ostensible effort at pooling resources and sharing facilities. Yet, a number of useful patterns do exist, although each has specific weaknesses: Kaiser's small community branches of larger urban centers; the Ross-Loos Clinic design of peripheral family service units around a central specialty station in Los Angeles; the HIP structure of multiple group centers serving one prepayment agency; the joint participation of many different local unions in the AFL Medical Center in Philadelphia and the Union Eye Care Center in Chicago.

7. Part-time medical staffs are not conducive to the development of close professional responsibility for patient care. There are many practical reasons for the widespread pattern of private practitioners devoting certain fixed hours to the health center. This is particularly true in the early stages of such a program, when full-time doctors are hard to come by. Certain specialty services are never needed on a regular, full-time basis. But outside physicians cannot feel the full sense of personal identification so essential to the program. Conflicts in obligation to plan and private patients arise. Limited office schedules do not always coincide with patients' needs for care. Personal doctor-patient relationships are difficult to maintain. Attitudes of the "charity clinic" spill over. Many group practice interrelationships are lost. The health center needs the primary interest and loyalty of its participating physician.

8. The opportunity for preventive medicine and health education—so much greater in group centers than in the solo office—is only rarely exploited. Our 1950 survey of all group practice units in California revealed how infrequently are special organizational efforts made in these fields.[17] Excellent efforts are under way in some plans, but the potential of such preventive services as a periodic health inventory, group activities for patients with similar disease problems, nutrition services, child guidance conferences, and the like is seldom realized.

9. A closely related factor is the inadequate use of specially trained auxiliary health workers. Modern family health service could profit enormously from the addition to the center team of

dental personnel, nutritionists, rehabilitation personnel, health educators, clinical psychologists, social workers, and other special aides beyond the reach of the private medical office.

10. Minority group discrimination, involving either membership or staff, is basically inconsistent with high standards of medical care. Health centers have generally a fine record with respect to equal treatment for all members, although the professional staff situation is still one of general exclusion of Negro and certain other minority groups. Expressions of social prejudice, gross or petty, should have no place in this movement.

11. The essence of health center service of good quality is the mutually responsible, democratically structured relationship between staff and members. Since, in my estimation, this is the most important factor in appraisal of health center experience, I should like to conclude with special reference to these doctor-patient considerations.

## Care of the Patient

All qualitative appraisal efforts must be directed primarily to the question: How good is the care of the patient? The judgment of the patient himself, I am convinced, is essential to any formulation of standards. A significant defect in most organized medical institutions—especially in teaching centers—is that standards of care are those dictated by technical criteria alone, without due regard to the needs or desires of patients as individuals. Actually, these two viewpoints are often in direct conflict—as will testify many a bewildered victim of the "complete work-up" whose ingrown toenail still hurts! Part of this problem stems from the too frequent attitudes of superiority and infallibility of doctors toward patients, and in the patronizing and indifferent air so often exhibited in the consultation room. The attitudes of doctors toward those labeled "neurotics" or "malingerers" or (in prepaid plans) "free-loaders" reflect the extremes of this orientation.

Greater consideration of needs of patients rather than strictly procedural dictates might lead to a reappraisal of the "routine" complete work-up, the panel of uniform laboratory studies, the standardized pads of treatment instructions. Technology must be the tool, not the master, of physicians in or out of groups.

On the other hand, real-life experiences with previous medical care have not prepared the average individual for his new health center role. Dissatisfactions or misinterpretations are more likely to be expressed as complaints to the union office or disgruntled return to "my own private doctor," than as bases for democratic discussion within the plan. Since the whole concept of the health center is essentially an unfamiliar one to most new members—particularly those automatically enrolled through large group contracts—there is a special need for effective and continuous membership education. While many plans are trying hard on this score, printed brochures and formal meetings are really not enough. The values have not been fully appreciated, for example, of regular, small, informal round-table get-togethers among members, doctors, and administrators—where all three groupings participate as equals as far as their interest in improving the plan is concerned.

My point is that the deep-seated difficulties in the doctor-patient relationship are not automatically corrected by the mere establishment of the group practice, health center structure. The new form does not necessarily improve the old content of patient care. This, too, must be specially planned, cultivated, and protected. Medical disorders cannot be easily segregated by admission clerks into specialty compartments.

First visits with a strange, busy doctor do not always reveal the real problem. Mutual respect and true interest are more valuable aids to diagnosis and treatment than are routine sigmoidoscopies or diathermy gadgets. The fragmentation of the patient among an array of specialists and technicians—accentuated by his own inexperience in group medical methods—constitutes the most telling deficiency of health center practice today.

This implies, of course, the need for a new design—one which places the broad-gauged personal physician at the hub of the medical care wheel.*

Such staff structure is meaningful, however, only in the context of full medical responsibility for the total body of patients. This cannot be delegated to medical directors or executive committees or lay boards, if continuous personal care of high quality is to be achieved.

That plan members themselves are keenly aware of this factor is reflected in the report of a recent attitude survey: "It becomes apparent that the members of the plan are capable of fine discrimination in evaluating their relationships with the professional staff. The accolade of "family doctor" is not easily won and . . . there must be a trial by fire in which the physician shows certain qualities that win for him that added measure of confidence embodied in that title." [14]

Despite much lip-service to this concept of the personal physician, the large West Coast centers are still specialist-oriented, and many of the so-called family physicians in HIP practice in isolation from the handsome new group facilities. The goal is even harder to achieve in those labor centers whose doctors each appear for only a few hours per week.

* He has been variously referred to as "managing physician" (Koplin and Daniels,[18]) and as "generalist" (Means [19]).

Perhaps we can discover in all this an explanation of the fact, minimized by too many health center enthusiasts, that the average person clings so tenaciously to the idea of "free choice of physician." This remains true, despite the infrequency of meaningful free choice and the lack of useful criteria for choosing.[20] Is it not that the factors of continuity, personal concern and familiarity with social background are as important to people as impressive architecture and specialty certification?

How, then, can an essential element of mutual respect and cooperation be introduced into the doctor-patient relationship? Can the principle of equality of interest and responsibility become the new element of this relationship in group centers?

The answers will be found only as we recognize the validity of the questions. Solutions will be tied up with better technics of democratic representation and professional staff structure in small, more personal health centers. The difficulties will be more easily resolved as financial subsidies and elimination of quota systems open the doors of medical training to more sons—and more daughters—of working class and minority population groups, and as more of these young doctors grow up in health center practice with an entirely different kind of conditioning. The answers will appear more readily when health plan members themselves develop more experience and maturity in this new method of medical care, and learn to present new demands upon their medical relationships.

Meanwhile, there is much to be done next Monday morning.

## Summary

Thus, the pattern emerges, as the postwar decade draws to a close. Significant achievements have been recorded by the various health center

programs, with the main values being those of demonstration of new potentials in medical care organization. Progress has, however, been disappointingly slow and real problems of consumer and professional reaction call for careful appraisal of the experience to date.

Many "external" influences—political, economic, and social—are recognized as deterrents to the development of the health center movement. Against this background, various "internal" organizational factors can be identified as a basis for evaluation of the ultimate quality of care in the centers. Among these perhaps the most important is the cultivation of a personal and continuous doctor-patient relationship, based upon mutual respect and upon equality of responsibility.

Both cause and effect of the problems confronting the health center movement is its failure fully to realize its own potential for improved quality of care. To the extent that this gap between promise and practice is closed, the group health method can satisfy most of the organizational—although probably not all of the financial—requirements of adequate family health service.

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# Global Aspects of Midwifery

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*We gain perspective toward our own work with each glimpse we catch of the magnitude and urgency of the broad hazards of health with which most of the world is faced.*

The number of babies born in the world each year is of the general order of eighty million. Of this number, the great majority, certainly more than three of every four are delivered not by doctors, nor by nurses, nor by trained midwives, but by a vast army of untrained attendants who, for the most part, are also illiterate, steeped in superstition, and abysmally ignorant of the veriest rudiments of clean and safe maternity care. Illogical though it may seem offhand the only hope of improving maternity care in most economically underdeveloped areas of the world lies in giving some vestige of training to these traditional birth attendants.

It is the purpose of this brief communication to document this statement by showing that the tutelage of these traditional birth attendants over short periods is: (1) the only practical way of meeting the needs of maternity care in economically underdeveloped countries, (2) feasible, and (3) will reduce dramatically both maternal and perinatal mortality rates.

The sanguine viewpoint is sometimes expressed that the main object of maternity care in underdeveloped areas should be to supplant these traditional birth attendants over a period of years or decades by fully trained midwives who have had one or two years of full-time instruction and supervision. Commendable as this plan is, it is impractical for several reasons. In the first place, the total number of midwives needed in the world, according to the estimate of UNICEF is 400,000—a figure which is probably an underestimate. To demonstrate how difficult it would be to give full midwifery training to any such number, even over several decades, is best illustrated perhaps by citing data from one or two specific areas. India is said to have had about 16 million births in 1951. Assuming that a midwife can attend 120 births a year, a rather high average, it would have required about 130,000 midwives to manage this number of births. In 1951 India had 200 midwifery schools, each graduating a yearly average of six to eight students, an annual total of, say, 1,500 students. At this rate, to train the 130,000 midwives needed, assuming that none ever died or left the profession, would take 88 years.

Pakistan has proposed training 110 midwives a year. At this rate, to train the 12,000 midwives needed for that country would require over a century. If it be suggested that the maternity needs of Pakistan, India, and other comparable countries could be met in a decade or two by increasing the number of midwives graduated tenfold—which might be true theoretically—let it be noted that Pakistan has estimated the cost of training one midwife at $666. (This is more than 12 times the annual income of the average peasant in that country.) To augment to any substantial degree the number of graduates now planned in that country (110 per annum) would be economically out of the question.

Finally, in regard to the impracticality of supplanting the traditional birth attendants with trained midwives, experience has shown that the economic and social status of a midwife must not be very much above the level of her clientele. A woman with two years of midwifery training is not going to spend her nights in rural hovels in the face of the monetary appeals presented by more populous districts. It will not work.

As for the feasibility of providing short-term courses and on-the-job tutelage for these traditional birth attendants, 6,000 are receiving such instruction in Indonesia during the present year (1955), 3,000 in India, and 1,200 in the Philippines. A successful program along these same lines is also being carried out in Haiti. The success of these enterprises has come as a surprise to many people who have regarded these old women as impervious to new ideas. This has been found not to be the case.

As for the ability of traditional birth attendants, after a modicum of instruction, to reduce maternal and perinatal mortality rates, the fact that they are for the most part illiterate and completely unschooled has led many to regard them as improper candidates for the responsibilities we have in mind. It is true, even with considerable tutelage, that they are going to lose a mother occasionally who might have been saved if she had enjoyed the care of an obstetric specialist in a completely equipped maternity hospital, but such cases will be almost inconsequential in number compared to the huge number of mothers and babies who can be saved by the application of certain simple and easily taught principles.

As an example of what can be gained by teaching her ordinary cleanliness, let us take tetanus neonatorum. To those who work in countries where this disease is wellnigh extinct, it comes as a sobering thought to recall that in certain localities of north China the neonatal mortality from tetanus neonatorum has ranged as high as 50 per cent; that in present-day Haiti it probably exceeds 5 per cent; and in many other countries it is doubtless as high or higher. These figures become somewhat more creditable, perhaps, if it is recalled that in localities as far apart as north China and the Belgian Congo, ancient custom and folklore demand that the native midwife dress the cord with wet topsoil, that is, with mud. This primitive custom is apparently very widespread in medically underdeveloped countries and accounts of course for the appalling incidence of tetanus in such areas.

Although the figure I am about to cite may seem incredible, the evidence suggests that if every umbilical cord in the world could be handled just with ordinary cleanliness, the number of neonatal lives saved thereby each year would well exceed a million. The huge toll taken by tetanus neonatorum has been emphasized because it shows the way the sheerest rudiments of clean maternity care can save untold millions of lives, provided these rudiments can be taught to the several hundred thousand traditional birth attendants. Of the three great causes of maternal death, hemorrhage, infection, and toxemia, the majority of women now dying in economically underdeveloped countries from these causes could be saved by the application of just a few elementary principles of prenatal care and cleanliness.

The instruction and training of traditional birth attendants should be part

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This paper was presented before a Joint Session of the Food and Nutrition, Maternal and Child Health, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

and parcel of the activity of any rural health unit in economically underdeveloped countries. This should be the main function in such areas of the fully trained midwife or nurse-midwife, who, as we envisage the picture, will be working as part of a public health team under the supervision of an obstetrician and a public health official. Such units are now in operation in many countries, but only a beginning has been made. Thus, the initiation, organization, and general surveillance of such programs should be the tripartite responsibility of the public health profession, the midwife profession, and the obstetrical profession.

In conclusion, let us recall, that the midwife's potentialities extend far beyond her ability to improve maternity care. To a greater degree than any other public servant perhaps, the midwife enjoys the affection, the esteem, and the confidence of the people she serves; and because of this fact her potentialities as an instructress of the great masses of people everywhere in matters of hygienic living are without equal. Illiterate and ignorant though traditional birth attendants may be, they can become our most efficacious agents in the teaching and promulgation of hygiene and preventive medicine among the underprivileged masses of the world. This, indeed, is part and parcel of the contribution which they can make to world health.

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## Crumbine Award Entries Invited

The Public Health Committee of the Paper Cup and Container Institute invites local health departments to compete for the Second Annual Samuel J. Crumbine Awards. Two awards are offered to official city, county, and district health units in the United States. One award is made for "outstanding achievement in the development of a comprehensive program of environmental sanitation"; the other for "outstanding achievement in the development of a program of eating and drinking sanitation."

Entries must be submitted by June 1, 1956. Only programs or activities either in progress or completed in 1956 will be considered and 1955 winners are not eligible. A descriptive brochure and application forms may be obtained from Public Health Committee, Paper Cup and Container Institute, 250 Park Avenue, New York 17, N. Y.

# Incidence of Trichiniasis in Swine, Pork Products, and Wildlife in Iowa

W. J. ZIMMERMANN, Ph.D.; L. H. SCHWARTE, D.V.M., Ph.D.; and H. E. BIESTER, V.M.D.

***Encouraging evidence is presented here to indicate that the now general prohibition of feeding raw garbage to swine has markedly reduced the incidence of trichiniasis. The problem and significance of the persisting minimal infestation are pointed up.***

The importance of the trichiniasis problem in the United States was emphasized by the statement of Stoll,[1] who in 1947 estimated that this country had 20 million cases of trichiniasis, three times the number found in the remainder of the world. The number of human cases reported annually from Iowa varies greatly, the maximum reported in any one year since 1942 being 133 (Table 1). It has been recognized in the past that the prime source of human infection is improperly cooked pork from swine fed raw garbage. Schwartz [2] reported recent studies in which 149 (11.21 per cent) of 1,328 garbage-fed swine were infected with Trichinella spiralis, whereas only 19 (0.63 per cent) of 3,031 diaphragms from midwest swine contained larvae. The intensity of the infections was also much greater in the garbage-fed swine.

The incidence of trichinae in nonprocessed pork sausage has varied in different areas of the country. Kerr [3] in California found 22 (1.3 per cent) of 1,750 samples to be positive, while Dickman [4] in Philadelphia examined 63 samples of sausage and found six (9.5 per cent) positive. Peres [5] tested 50 samples in New Orleans with negative results. Zimmermann, Schwarte, and Biester [6] contrasted the incidence in pork sausage in a one-year period extending from November, 1944, through October, 1945, with a similar period nine years later from November, 1953, through October, 1954.

The source of infection for grain-fed swine remains an unsolved problem. Some researchers have implicated the rat-swine relationship and garbage leaks on the farm—which may be justified in part. However, only slight consideration has been given to the possible reservoir of trichiniasis in wildlife. The presence of some species of wild animals in the hog lot has been observed, and in some instances carcasses of pigs were found mutilated and partly consumed. It is well known that some species of wildlife are scavengers. This must be considered as a possible factor in the perpetuation of a reservoir of infection. The possibility should not be dismissed of transmission through

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This paper was presented before a Joint Session of the Conference of Public Health Veterinarians and the Laboratory Section of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 16, 1955.

This investigation was supported in part by a research grant, G-4113 (c), from the National Institutes of Health, Public Health Service.

**Table 1—Reported Cases of Human Trichiniasis**

| Year | Iowa * | United States |
|---|---|---|
| 1955 | 10 (through 9/9) | 187 (through 9/3) |
| 1954 | 3 | 251 † |
| 1953 | 0 | 395 ‡ |
| 1952 | 19 | 367 ‡ |
| 1951 | 1 | 393 ‡ |
| 1950 | 0 | 327 ‡ |
| 1949 | 37 | 353 ‡ |
| 1948 | 10 | 487 ‡ |
| 1947 | 0 | 451 ‡ |
| 1946 | 0 | 317 ** |
| 1945 | 133 | 257 ** |
| 1944 | 0 | 357 ** |
| 1943 | 0 | 209 ** |
| 1942 | 1 | 307 ** |

* From Hendricks, S. L., Iowa State Department of Health. Personal communication Sept. 30, 1955.

† From Morbidity and Mortality Weekly Report, U. S. Department of Health, Education and Welfare, PHS 3:2 (Jan. 7), 1955.

‡ From Morbidity and Mortality Weekly Report, U. S. Department of Health, Education and Welfare, PHS 2:3 (Sept. 20), 1954.

** From Pub. Health Rep. (Mar. 10), 1948; (Mar. 22), 1946; (Mar. 23), 1945; (Mar. 17), 1944.

feces when wildlife frequents the feeders and waterers in hog lots. Recognizing the limited investigation into possible reservoirs of trichiniasis in the wildlife of the United States, a number of wildlife species were examined for the incidence of trichiniasis and studied to determine their possible role in the transmission of this parasite to swine.

Early investigations and surveys conducted for T. spiralis indicate that a variety of mammals are natural hosts for this parasite. Gould [7] included the following in a list of naturally infected hosts—mouse, rabbit, beaver, domestic cat, polecat, palm civet, dog, wolf, coyote, fox, marten, ferret, European and American badgers, raccoon, polar bear, common bear, mongoose, man, pig, wild boar, rat, coypu, hedgehog, marmot, mole, hippopotamus, and porcupine. Morgan and Hawkins [8] include skunk and muskrat in a list of natural hosts. Trichiniasis is widespread in arctic marine and land animals, Rausch [9] finding T. spiralis in the polar bear, arctic fox, seal, and white whale. Dolman [10] mentions the moose and deer as being natural hosts for T. spiralis. Hauge [11] and Allenspach [12] found T. spiralis to be rather abundant in ranch-raised mink of Norway and Switzerland, respectively. No report is available for wild mink. In addition to the aforementioned naturally infected hosts, experimental infections have been established in many other animals such as cattle, horses, and guinea pigs, making it evident that if conditions were such that the animals could ingest infective trichinae, few, if any, animals would be excluded from a host list for this parasite.

A study to ascertain the incidence of trichiniasis in swine and pork products was initiated in October, 1944, and continued through June, 1946. The emphasis was placed on pork sausage obtained from a local retail source. During this study, which ended June, 1946, a total of 915 sausage samples were examined along with 189 swine, 81 rats, 15 gophers, 8 squirrels, and one blackbird.

An opportunity arose in November, 1953, to renew these studies on a more intensive basis than in the previous study. The sausage sampling was expanded to include two retail sources with 12 name-brands of sausage. As of June 30, 1955, examinations were made on 2,032 nonprocessed pork sausage samples, 636 processed pork sausage samples,* 2,194 swine, 119 rats, 818 wild mammals, 50 carnivorous birds, and 29 snakes. The 1953–1955 studies were initiated after most states had passed regulations prohibiting the feeding of raw garbage to swine.

Zimmermann, Schwarte, and Biester [6]

* All samples were tested by the Baermann-digestion method, 45-gram samples (0.1 lb.) being used. The compression method was also used on most samples, but proved of little value except in heavily infected animals.

had made a comparison of the incidence of trichina larvae in pork sausage for a one-year period commencing November, 1944, with a similar period nine years later. The incidence of trichina larvae in bulk and link sausage during the 1944–1945 study was 11.9 and 11.5 per cent, respectively (Table 2). During the 1953–1954 study the incidence of infected samples in bulk and link pork sausage was only 2.2 and 2.4 per cent respectively. The original studies had been carried out for a 20-month period, therefore the present studies were extended to June, 1955, to give a comparison between the two eight-month periods nine years apart. These comparisons are included in Table 2.

Bulk sausage during the eight-month period November, 1945, to June, 1946, showed a rather high incidence of infection, 21 (13.4 per cent) of the 157 samples examined being positive. The number of larvae recovered from 45 gm (0.1 lb) samples was relatively small, the mean being 4.0 larvae. The maximum number of larvae recovered from any sample was 12. In contrast to this 13.4 per cent incidence in 1945–1946, only 0.6 per cent of the 855 samples of bulk sausage examined were positive in the eight-month series commencing November, 1954. The mean number of larvae recovered from this series was 4.8. The incidence of 0.6 per cent is a decrease from the one-year period immediately prior when 2.2 per cent of the bulk sausage was positive.

The incidence of trichinae in link sausage for the period November, 1945, to June, 1946, was similar to that encountered for bulk sausage during the same period, 12.2 per cent of the link samples being positive. The mean number of larvae recovered from the 15 positive 45 gm samples was 4.0, ranging from one to 15 larvae.

The incidence of trichinae in nonprocesed link sausage during the eight-month period commencing November, 1954, was considerably higher than for the bulk sausage of the same period. The incidence for link, 4.4 per cent, is mainly the reflection of the results found in one name-brand link sausage. Eleven (27.5 per cent) of 40 samples of this brand were positive during this period. The source of swine killed by this packer is not known, but sausage from other packers in the same area did not show this high incidence. The mean number of larvae per positive sample, 22.1, is influenced mainly by the results in two samples. One contained 165 larvae and the other had 69 larvae in 45 gm samples. The other 11 positive samples contained from one to 12 larvae.

**Table 2—Incidence of Trichinae in Pork Sausage Samples**

| From<br>To | Nov., 1944<br>Oct., 1945 | Nov., 1953<br>Oct., 1954 | Nov., 1945<br>June, 1946 | Nov., 1954<br>June, 1955 |
|---|---|---|---|---|
| Bulk Sausage | | | | |
| Number Samples | 303 | 597 | 157 | 855 |
| Positive—Number | 36 | 13 | 21 | 5 |
| Per cent | 11.9 | 2.2 | 13.4 | 0.6 |
| Mean larvae per 45 gm | 9.0 | 3.5 | 4.0 | 4.8 |
| Link Sausage | | | | |
| Number Samples | 321 | 287 | 123 | 293 |
| Positive—Number | 37 | 7 | 15 | 13 |
| Per cent | 11.5 | 2.4 | 12.2 | 4.4 |
| Mean larvae per 45 gm | 4.3 | 45.9 | 4.0 | 22.1 |

In the nine-year interval between the two studies a new type of precooked link sausage was developed. The processing that this type of sausage undergoes is apparently sufficient to kill the infective larvae. The 475 samples of this type examined during the 20-month period in 1953–1955 were negative. All this type link sausage was processed under federal inspection. In addition to the precooked type, 161 samples of smoked link sausage were also examined with negative results.

During the entire 20-month period November, 1944, to June, 1946, 57 (12.4 per cent) of 460 bulk samples were positive. The incidence in link during the same period was quite similar, 52 (11.7 per cent) of 444 samples containing trichinae.

A definite drop in incidence occurred in the nine-year interval between series of studies as only 1.2 per cent of the 1,452 bulk samples examined during the 20 months November, 1953, to June, 1955, contained trichina larvae. The incidence in nonprocessed link sausage for this period was somewhat higher than for bulk sausage since 20 (3.4 per cent) of the 580 samples examined were positive.

In addition to the survey of incidence of trichinae in pork sausage, a study was made to determine the incidence in swine from Iowa farms (Table 3). During the 1944–1946 study diaphragms from 189 pigs were examined with negative results. One hundred and seventy of these pigs were from Iowa State College herds where garbage leaks were excluded. However, 12 diaphragms were obtained from an area of eastern Iowa subsequent to an outbreak of human trichiniasis involving 130 persons. Three of 30 rats from a slaughter house where the infected meat was processed proved to be highly positive.

During the present study, from November, 1953, to June, 1955, a total of 2,184 swine diaphragms has been examined. These swine came from four areas of Iowa, including 133 samples from college herds and 917 diaphragms from a small packing house in central Iowa. Only one positive diaphragm was found, this coming from an area in southern Iowa where 687 samples were obtained with histories of the swine. The farm from which the positive sample originated reported no garbage leaks. Two other diaphragms were obtained later from the same farm at about six-month intervals but both proved negative. In the positive sample 62 larvae were recovered from the 45 gm. The incidence of 0.046 in the 2,184 pigs examined in the 1953–1955 study is lower than the 0.63 per cent reported by Schwartz[2] for midwest swine.

**Table 3—Incidence of Trichiniasis in Animals Examined During 1953–1955**

| Species | Number Examined | Positive | |
|---|---|---|---|
| | | Number | Per cent |
| Swine | 2,184 | 1 | 0.046 |
| Rat | 119 | 14 | 11.8 |
| Mink | 85 | 12 | 14.1 |
| Fox, adults | 252 | 30 | 11.9 |
| Fox, cubs | 56 | 1 | 1.8 |
| Opossum | 40 | 1 | 2.5 |
| Raccoon | 229 | 2 | 0.9 |
| Coyote | 4 | 2 | 50.0 |

A limited number of rats were examined in this project. In the 1944–1946 series 81 rats were examined. Thirty of these came from a slaughter house through which infected pork was traced. Three were positive. Thirty-eight rats came from college farms where no garbage leaks were present and 13 others came from an area near the scene of the previously mentioned outbreak. All proved to be negative.

During the present series of examinations 119 rats were obtained, including 10 from the Veterinary Medical Research Institute, groups of 61, 20 and 11 from three separate village and city dumps and 17 from a farm. Fourteen of the 61 rats from one of the dumps proved positive. This was the same area from which one of 687 pig diaphragms proved positive. All other rats in the study were negative.

The studies on wildlife included 14 species of native Iowa mammals. The studies were carried out primarily during the 1953–1954 and 1954–1955 trapping seasons in late fall and early winter of those years.

Eighty-five wild mink were examined during the two seasons of the study. Twelve (14.1 per cent) were positive as shown in Table 3. The compression method proved of practical value in the mink and rat. Ten of the 12 positive mink specimens were detected by the compression method. The finding of trichiniasis in the wild mink is of particular importance since the disease had never been reported from this species in the United States. European reports indicate that trichinae have been found in ranch-raised mink. Four ranch-raised mink examined were negative. A significant reduction of incidence in mink was noted the second season of the study. The incidence during the 1953–1954 season was 17.9 per cent while that in the second season was only 10.9 per cent.

Thirty (11.9 per cent) of the 252 adult foxes examined during the two years were positive. The incidence of trichiniasis in adult foxes was slightly lower than that in mink. The intensity of the infections was much lighter than those encountered in the mink. As in the mink a marked decrease in the incidence of infection was noted during the second year of the study. Whereas 19.0 per cent of the adult foxes were positive in the 1953–1954 study only 7.7 per cent were infected during the second season. A reduction in intensity was also noted the second year. The incidence of trichiniasis in fox cubs was low. Only one of 56 fox cubs was found to be infected. This cub was heavily infected—5,865 larvae were recovered from a 45 gm sample.

In addition to the mink and fox, three other species of wildlife, namely raccoons, opossums, and coyotes included infected individuals. One of 40 opossums was infected with trichinae. The occurrence of T. spiralis in the opossum is apparently the first record of the parasite in this host. Only 48 larvae were recovered from the 45 gm sample after digestion.

Only two of 229 raccoons examined were found to harbor trichinae. One of these was an animal confiscated while illegally held as a pet. Four coyotes were examined, two being positive. Infections found in both raccoons and coyotes were light.

A wide variety of other animals was examined with negative results. These included 128 muskrat, two deer, four Franklin ground squirrels, two woodchucks, four striped skunk, two beaver, one prairie dog, 15 pocket gophers, nine fox squirrels, one blackbird, 20 crows, 12 owls, two bald eagles, and 29 snakes. In addition to these native Iowa animals, samples were also obtained from a Minnesota zoological garden of a black bear, polar bear, and a sea lion which were negative.

The carnivorous habits of hawks,

owls, and eagles expose them to trichinous infection. A possible explanation for the absence of infection in the birds examined in these studies, and those of other workers, may be the relatively high body temperature of birds. Augustine [13] found that most trichinae in the chick were killed by unknown means after dissemination in the body musculature. Body temperature may also play an important part in the absence of trichinae in the three species of snakes examined. Matoff [14] was able to establish infections in turtles when the turtles were kept in an incubator at 37° C.

During the examination of the snakes trichinae were not found, but eight of the 10 common water snakes and one of 11 red-sided garter snakes contained larval nematodes similar in size to T. spiralis. These nematodes were tentatively identified as Dracunculus sp. and a species of Filarid, with confirmatory identification by the staff of the United States National Museum. Specimens have been incorporated into their collection. Filarids have not been previously reported in literature as parasitic in these species of snakes.

If species of wildlife, such as the fox and the mink, help perpetuate trichiniasis in grain-fed swine, two modes of transmission must be considered. First, direct consumption of infected carcasses by swine; and second, fecal transmission from infected animals. Infected samples of fox, mink, and opossum meat were fed to noninfected swine. After sufficient time had elapsed for normal development of the parasites, the pigs were sacrificed and examined for T. spiralis larvae. Typical trichinae infections developed from all three types of infected meat.

In order to test the possibility of fecal transmission of trichiniasis a series of nine experiments were carried out. These included two rat-to-rat tests, three rat-to-pig, one rat-to-fox, and three fox-to-pig. All yielded negative results.

## Discussion

In these studies we have attempted to determine first, the incidence of trichinae in swine and pork sausage in Iowa during two periods nine years apart; and second, to determine whether a trichiniasis reservior exists in the wildlife of Iowa which could play a role in perpetuation of trichiniasis in grain-fed swine. The incidence of trichinae in pork sausage during the 20-month period November, 1944, to June, 1946, was surprisingly high, being 12.4 per cent in bulk sausage and 11.7 per cent in nonprocessed link sausage. There is marked contrast between these results and those in the 1953–1955 period. The latter series revealed a reduced incidence of infected sausage, 1.2 per cent of the bulk and 3.4 per cent of the link sausage containing trichinae.

Regulations prohibiting the feeding of raw garbage to swine now in effect in 47 of 48 states may be an important factor in the significant reduction in the incidence of infected sausage during the 1953–1955 period.

An extremely low incidence of trichiniasis was found in the Iowa swine examined in the 1953–1955 series, only one of the 2,184 pigs examined being positive. Notwithstanding the low incidence (0.046 per cent) in grain-fed swine in 1953–1955 an occasional infected pig may be a potential source of infection in man if the pork products made from it are consumed without proper cooking. The trichiniasis problem will never be completely solved until the source of this limited number of infections in grain-fed swine is found.

It is difficult to ascertain just what role, if any, rats and wildlife may play in the perpetuation of trichiniasis in grain-fed swine. The fact that trichiniasis is found in many of the species of wildlife constitutes a problem in the eventual elimination of this disease. This is especially true if some link is

found to connect trichiniasis in swine with that of wildlife. If such a link were found, the trichiniasis problem will only be more clearly defined, not eliminated. It would be impossible, as well as impractical in the conservation sense, to attempt to completely eradicate all species of wildlife which may act as reservoirs.

The relatively high incidence of trichiniasis in foxes and mink seems to place these two species with the rat as possible sources of infection for swine. The other three species of wildlife in which trichiniasis was detected undoubtedly play only minor roles, if any, in Iowa. This is true of the coyote because of its scarcity, and of raccoons and opossums because of the extremely low incidence of infections.

Two possible modes of transmission of trichiniasis from wildlife to swine have been suggested. They are (1) fecal transmission, either of larval or adult trichinae, or (2) direct transmission when the pigs eat infected carcasses. Both methods were explored in our studies. The nine tests in fecal transmission, involving either infected rats or foxes as donor animals, and either pigs, rats, or foxes as receptors all proved negative. This should not rule out the possibility of fecal transmission, especially in the light of the work of Spindler [15] who obtained positive results by fecal transmission from a variety of donors to 53 of 61 swine. More research is necessary in this field using as donor animals such wildlife species as the wild rat, fox, and mink.

Consumption of infected flesh of wild animals produced trichiniasis in swine as when flesh of infected fox, mink, and opossum was fed to swine, trichiniasis with characteristic encysted larvae was observed.

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"No area in the nation should continue to be without the services of a full-time health officer and other essential personnel. No area should be without public health services or sanitation facilities. No area should be without community health services, such as maternal and child-health care."

(Excerpt from the address by Harry S. Truman, November 17, 1955, on the occasion of the annual presentation of the Albert Lasker Awards at the 83rd APHA Annual Meeting in Kansas City, Mo.)

# Does Advertising Need a Godfather?

PAUL J. CARDINAL

***Though this postprandial discourse was addressed to the Food and Nutrition Section and finds its illustrations in that area of public health practice the points that are raised will prove challenging to many others in our broad field of endeavor.***

The highest compact we can make with our fellow, wrote Emerson, is "Let there be truth between us two forevermore." He wrote this in his "Conduct of Life." Life would indeed be wonderful if all men were to live fully up to this requirement, but it is human nature to err at times. So there will always be among men a few who cannot resist the temptation of toying with the truth.

It is also human nature to be credulous. Charles Lamb defined credulity as a child's strength but a man's weakness, and Solomon said, "The simple believeth every word." Montaigne wrote, "We seek and offer ourselves to be gulled." But a little credulity, in the words of still another, "helps one on through life very smoothly," and Sir William Osler concluded: "This is yet the childhood of the world, and a supine credulity is still the most charming characteristic of man." Goldsmith went even further to say, "Nothing is so contemptible as that affectation of wisdom which some display by universal incredulity."

Now if those who toy with truth take advantage of the too credulous, somebody may get hurt. So man long ago deemed it wise to draw up rules and codes to prevent such transgressions. The rules were probably few and simple in the days of primitive barter, but today's transactions of purchase and sale are regulated by a veritable maze of laws. Some are local, some are set by the states, most far-reaching are the federal.

Advertising is selling, hence, it is subject to certain rules and government regulations. However, opinion has been voiced recently that they are not sufficient, that the regulatory bodies enforcing them are inadequate in number and scope, and that these bodies do not have the manpower or budgets to exercise wholly effective control.

In the field of public health it is only natural that special concern should be felt. It is not just advertising, but all the various channels of publicity that are getting special scrutiny from committees set up in organizations like the American Public Health Association.

The most flagrant abuses, the out-and-out-fake, the obvious fraud, are moved upon quickly through legal channels. The more difficult menace, if it really is a menace to the public health, is in borderline claims that cannot be disproved easily. Federal and state agencies may be powerless to act, or may be reluctant to spend taxpayers' money if ultimate success is not certain.

Can control be exercised over this area of borderline advertising? Some say it can, through coordinated programs of organizations and people having budgets and actual money to spend in such a direction. But this is a Herculean job. It will take years to do and far more money than most people realize. Is it really necessary?

This entire discussion is meant to apply only to advertising, not publicity or the misinformation spread by faddists,

faddism, or quackery. The reasoning laid down naturally applies to the advertising of food and nutritional products which are the special concern of this section. I could have selected the title, "Does Food Advertising Need a Godfather?" And I am using the word "Godfather" not in the sense of sponsor for a child but in its other definition as a sort of emergency step-parent. The real parents are the company marketing the food product and the advertising people or agency preparing the copy. Our question then is, does advertising need someone else to stand behind them ready to tap them on the shoulder every time a proposed claim or statement has a chance to be construed as in the borderline area of fact and part-fact, truth and part-truth?

**The first point** I want to make is that advertising as you see it today is the product of a well developed business manned by professional people who have been deeply schooled in the psychology of the buying public and have their fingers on the pulse of human responses and reactions.

Advertising is not new. It is at least 3,000 years old, for it was used by the ancient Greeks. Its development into a profession in the United States has been contemporary with our industrial and cultural growth during the last 100 years. Typifying this development is the modern advertising agency, which became a virtual necessity with the advent of radio and television. How these new means of communication would affect people's thinking and habits, how they could be used for advertising, required scientific study and application. Obviously this was a job beyond the scope of one or two people.

There are around 3,500 advertising agencies in business today in this country. Just as the medical profession has specialists, so these agencies have whole groups of people whose thinking and effort are focused on a particular field in which they have become expert. You will probably think of art departments and copywriters and production people. But there are market analysts, survey people, merchandising experts, packaging specialists, and many others—and if you get into radio and television you need a whole corps of additional personnel skilled in the technicalities of voice amplification, lighting effects, etc. You can understand how this has come to be such big business when you consider that this year advertisers are spending [1] in the five major medias—newspapers, magazines, radio, television, and outdoor display—almost five billion dollars, plus another three and a quarter billions in direct mail, farm and business papers, and other channels. Advertising expenses usually range from two per cent to 15 per cent of sales volume of different products. Individual company appropriations get as high as 75 million dollars.

Advertising, like the other phases of selling and marketing, is so important today that at least the rude elements of it are taught in our school classrooms as early as junior high school, while excellent courses in it are offered at our colleges and schools of business administration.

**Point number two** is that the psychology of advertising requires emphasis, and that the boundaries between emphasis, overemphasis, and exaggeration are not always clearly marked.

Competition is keen. You see it in the great battle between the giants of the automotive industry and in terms of the used car lot. But it is every bit as keen in the food business. Here are

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This paper was presented before the Food and Nutrition Section of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

some facts given by Paul Willis, president of the Grocery Manufacturers of America, in a talk [2] last June. The average grocer in 1939 handled about 1,000 items. In today's market there are from 4,000 to 7,000 items, depending on the size of the store. Since 1939 the food industry has quadrupled to a 64 billion dollar business. New and improved foods have changed the manner in which Mrs. American Housewife spends her weekly food budget. Since 1939, for instance, the sale of baby foods has soared by 1,500 per cent and frozen juices have gone up 800 per cent. During 1954 alone the sale of what can be called "convenience foods" was up 20 per cent over the previous year, compared with an increase of only 4 per cent for all foods. But for the improvement in convenience offered by the newer products, public spending for foods would be 17 per cent of income, actually it is 25 per cent. And Mr. Willis stressed that "America Wants Newness." This has been proved by motivation research going on in the food field. Here is how one such study summed it up: "Women, with their new independence and broader outlook, respond to many appeals. They like to be slightly different and original. They are anxious to achieve menu variety. They react positively to products which they feel reflect their own personality. They like the products which offer them the convenience and saving of needless time and effort, while leaving time for them to be creative."

Now how, in this furious arena of competition among food products, is a product possibly going to survive, much less forge ahead, unless it is advertised, sold, and merchandised—and merchandising requires building up dealer enthusiasm and cooperation—unless you do the job with Emphasis? You have got to use strong words and hot adjectives. Remember, you have got to command attention, hold interest, arouse buying urge, and then catapult the prospective buyer from her natural inertia to the point of sale where she enthusiastically lays her money on the counter, picks up the package, and goes home eager to enjoy the product—and, if it is a first purchase, to test it.

As I said, the boundaries between emphasis, overemphasis, and exaggeration are often not clear. Repetition, for instance, can bring about overemphasis. Depending upon what the product is, who makes the statement, and how it is made—what size of type or what inflection of voice—we may decide that a certain claim is in one or the other category. Depending upon our own individual thinking, you may decide that a claim is unreasonable and I may think it quite reasonable.

**Number three** in my list of points is that Americans are subjected to much high-pressure selling, know that it sometimes produces overemphasis, find some exaggeration entertaining.

You may remember this quotation from Shakespeare's Twelfth Night, "Foolery, Sir, does walk about the orb like the sun; it shines everywhere." That observation may have motivated P. T. Barnum into trying the sensational and eventually becoming America's greatest showman. Barnum [3] was really a man of many sides and was not too successful until he conceived the idea in 1835 of buying George Washington's colored nurse—her name was Joice Heth—and exhibiting her with a claim that she was 160 years old. He rang the bell with this to the tune of $1,500 weekly receipts, quite a figure for those days. When Joice died the next year somebody asked for a postmortem, which showed she had actually been between 75 and 80. Unabashed, Barnum asserted that he had been defrauded when he bought the lady. Now I do not know of any particular harm that resulted to the public who thoroughly enjoyed this hokum.

People today probably delight even more in extreme exaggeration, for 42 per cent of our adult population now are high school graduates and an additional [4] 20 per cent have had at least one year of high school, and they all are certainly better trained to know exaggeration when they see it. All Americans have become quite expert in the art of deflating it.

**Point number four** is that most advertisers want to be correct and no sane businessman or copywriter wants to invite citation by the Federal Trade Commission or other regulatory bodies.

Recently I saw a statement from an FBI official that one out of every 18 persons in the country "represents the criminal element" and law enforcement agencies have to locate an average of 1,000 fugitives a month. I suppose it would be natural then to expect a few people to get into a business that reflects the criminal element within them, to try and make some fast dollars and then "blow," as they say in the slang of the underworld. There have admittedly been some notorious promotions in the dietary and vitamin field. There was the "doctor" (I am not sure what kind) who cured gallstones and a long list of diseases with his special food products and who, even after the government closed his radio station, established himself in a foreign country and may even still be beaming his messages into this area. But not many persist; most of these businesses built upon "tampering with the truth" fold up financially. The law gets them.

But does the law stop advertising claims which are not shaped with criminal intent, but which do misrepresent or mislead? Let me tell you a little about the work of the two great federal groups which are, in my opinion, making the law effective in this direction.

Since several members of this Food and Nutrition Section are a part of it, you are probably most familiar with the Food and Drug Administration of the Department of Health, Education and Welfare. I am sure you know the general provisions of the 1938 Food, Drug and Cosmetic Act and how [5, 6] the FDA, in administering it, is empowered to inspect food plants and warehouses, to pick up products in the open market and test for adulteration and contamination, correctness of container, and to do many other things to protect the consumer against misbranding. You know how FDA watches label statements. However, not all of you may realize that the printed circulars and advertising literature which accompany a product in interstate commerce also come within FDA jurisdiction. A Supreme Court opinion has held that mailing this literature separately, instead of with the product, does not get it beyond FDA reach.

The FDA can act through criminal prosecution, seizure proceedings, or injunctive proceedings. I quote from a consent injunction decree issued by a federal court in one rather bitterly fought case against an advertiser:

> Defendants . . . are perpetually enjoined from directly or indirectly introducing or causing to be introduced and delivering . . . into interstate commerce the article designated as ———, or the same article by any other designation or any vitamin and/or mineral product . . . accompanied by any written, printed or graphic matter which states, represents or implies directly or indirectly that such article will or may be effective to prevent or adequately treat or cure any of the following named diseases and conditions:
>
> Arthritis, rheumatism, high blood pressure, abnormal blood count, Buerger's disease, cancer, leukemia, tumor, cerebral hemorrhage, stroke, apoplexy, diabetes, deafness, infection of the ear, middle ear disease, astigmatism, cataract, nearsightedness, gall bladder trouble, hemorrhage connected with menopause, premature menopause, dysmenorrhea, prostate trouble, impotence in males, sterility, uterine cramps, uterine hemorrhages, angina pectoris, coronary occlusion, coronary thrombosis, heart disease, hypertensive heart disease, rheumatic heart disease, infantile paralysis, poliomyeli-

tis, cystitis, kidney congestion, kidney stone, nephritis, pyelitis, cirrhosis of the liver, hepatitis, sclerosis of the liver, multiple sclerosis, palsy, paralysis, Parkinson's disease, scarlet fever, measles, meningitis, pneumonia, smallpox, ulcers (duodenal, peptic, stomach, gastric), varicose veins, or any other symptom, disease or condition that is not within the allowable claims specified in paragraph V, including subparagraph 31.

The decree then lists 15 claims which likewise must not be implied in the advertising literature. Here are three of them:

Most of the ills and diseases of human beings are the result of chemical starvation of our bodies for vitamins and/or minerals.

All vitamins and other accessory food factors originate in plant material.

Physicians are trained in medicine, not nutrition, and are therefore not prepared to accept the proposition that many people's complaints may be, and probably are, caused by deficiencies of micro-food factors; the 'medical approach' of doctors in ascribing illness and disease to poisons and germs is old fashioned.

But undoubtedly foremost in the minds of those who fashion an advertising claim is the FTC, which administers the Federal Trade Commission Act of 1914 and its 1938 Wheeler-Lea amendment, to prevent unfair competitive practice and the dissemination of harmful false advertisements. If an advertised product may be injurious to health, or if there is real intent to defraud or mislead, the offense is a misdemeanor punishable by fine or imprisonment. False advertisement is very clearly defined.

The FTC follows two broad types of procedure, one involving formal complaint and trial, the other more informal cooperative processes such as individual stipulation agreements. In a formal complaint against a product widely proclaimed over television and radio, FTC last year won [7] a stipulation and agreement to cease and desist from disseminating, "any advertisement by means of the United States mails or by any means in commerce, as 'commerce' is defined in the Federal Trade Commission Act, which ———— represents directly or by implication:

That the symptoms or conditions sometimes accompanying the advance of age into middle and later life, such as aches, pains, nervousness, nervous tension, fatigue, a tired feeling, loss of energy, backache, faulty elimination, digestive disturbances or upsets, poor appetite, loss of weight and insomnia result more frequently from vitamin B complex deficiencies than from many other causes or that any particular percentage of such symptoms or conditions is caused by such deficiencies unless such is the fact generally accepted and recognized by experts qualified in the field of nutritional science.

That said preparation possesses any value in the treatment of the symptoms or conditions enumerated in paragraph (a) or any other symptoms or conditions which may result from deficiencies of vitamin $B_1$, vitamin $B_2$, vitamin C, niacinamide or iron, unless such representation be expressly limited to symptoms or conditions due to such deficiencies.

That said preparation is of any value in retarding or preventing the degenerative processes which affect the human body in the middle and later life as a result of advancing age alone.

That said preparation will restore vitality, strength, energy or a youthful feeling except to the extent that these conditions may have diminished due to deficiencies of factors of the vitamin B complex.

That the diets of persons over 35 years of age are more often than not deficient in any of the B complex vitamins or that any particular percentage of such diets are deficient in such vitamins unless such is the fact generally accepted and recognized by experts qualified in the field of nutritional science.

That ——— taken as directed, supplies a therapeutic dose of vitamin $B_{12}$ unless and until it is generally accepted and recognized by medical experts qualified in the field of nutritional science that the quantity of said vitamin provided by said preparation when taken according to the directions contained on its label constitutes a therapeutic dose.

That it is necessary to take or consume any factor of the B complex vitamins every day in order to prevent a deficiency of such factor, provided, however, that this shall not prevent respondent from representing that the average daily intake of B complex vitamin must be sufficient to provide minimum daily requirements or that deficiencies of such vitamin

may be avoided by daily ingestion thereof in doses providing minimum daily requirements.

In a complaint dated June of this year FTC charges another company with [8] making the following statements which it says are misleading and constitute "false advertisements" as defined in the Federal Trade Commission Act:

That vitamins as usually purchased by the public at a retail establishment are stale and have lost their potency.

That ——— is fresher and therefore more nutritious than competing products.

That all ingredients in ——— are nutritional elements that protect the health.

FTC holds that the following is the truth:

The stability of vitamin and mineral products, as now commonly manufactured, will exceed their normally expected shelf life.

From a nutritional standpoint all well made vitamin and mineral tablets are just as fresh as ——.

The need in human nutrition of the following ingredients in —— has not been affirmatively established: vitamin E, pantothenic acid, para-amino benzoic acid, choline, inositol, molybdenum, manganese, rutin, zinc, boron, nickel, cobalt, chlorophyll, sarsaparilla extract, alfalfa extract and yeast extract. Such ingredients cannot, therefore, be truthfully characterized as nutritional or health protecting elements.

In addition to FDA and FTC, the advertiser may have to remember other federal departments, such as the Treasury Department if he is selling an alcoholic beverage, the Post Office Department, and individual state laws and organizations such as the Better Business Bureaus.

For the person who wields the blue pencil and has final responsibility over the claims to be made in his company advertising life is far from light. Speaking as one who has held that blue pencil I can assure you the desire to be correct, accurate in scientific data, and fair in the over-all picture is predominant. A cease and desist order is a blight upon the company's record just as worrisome as the arrest of one of your children.

**Point five** is that the practical influence of additional voluntary tribunals appointed within organizations such as the APHA will at best be limited by manpower and available time of those who can serve. Furthermore, the need for such tribunals is decreasing, not increasing. For the public's education is broader every day. And manufacturers, as the Journal of the American Medical Association observed editorially in the February, 1955, issue when announcing discontinuance of the AMA seals, "have assumed more and more their share of responsibility in marketing worthwhile products."

Actually, and I think this deserves to be **point number six,** most Americans feel it among their inalienable rights to do their own choosing, and believe they are qualified to do it, be the subject a presidential candidate or a food to eat. Americans do not like paternalism. They have been taught the freedoms of thinking and speech. They abhor censorship. They may disagree violently with what they hear or see, as on radio and TV programs, but they will fight for their right to listen and look and for the pleasure they may get out of tuning out the objectionable by a twist of the dial. It is also logical to expect that the more voluntary tribunals there are, the greater will be the chance of disagreement between them on controversial advertising.

Fillmore Sanford, executive secretary of the American Psychological Association, offered an interesting piece of advice at the opening session of this convention when he said those in the medical and health professions will have to offer "more advice and less control, more consultations and less prescriptions."

Moreover, and this is **point number seven,** the public favors the underdog, is critical of critics, and loves to boo the umpire. So criticism of an adver-

tisement, or an advertiser, or a product which a person may hold in high esteem can easily boomerang. In fact, it can become the best stimulant for revitalizing what otherwise might have remained a flat or drooping sales curve. The public knows from experience that the underdog may win, that the Broadway show which was panned as impossible by the critics may still turn out to be the season's outstanding hit.

In the field of science the public is used to seeing conflicting claims and counterclaims, such as for automobiles and toothpastes. This is certainly true in the field of medical science where eminent doctors may disagree. It is true in the field of nutrition.

Let us recognize also that many persons tend to suspect that the real purpose behind some criticism is to get advertising for the critic—and consequently they discount a percentage of what the critic says! There is sense in Ben Jonson's adage: "The dignity of truth is lost with much protesting."

**The eighth point** is that a particular advertisement or claim may never actually exert influence anyway! It is a fact that an advertisement can be a complete "flop," even if well prepared. Sometimes a whole advertising program is a failure. This can come about, just as in medicine, from wrong diagnosis or wrong treatment. It can be due to poor timing, wrong theme, wrong media, unsupported claims, ridiculous claims which insult the intelligence of the buyer, or just plain loyalty of the consumer to the product he is already using.

I would like to discuss for a moment consumer loyalty. It has actually been measured. It is astonishingly powerful. A basic research [9] has shown undivided loyalty to a few favored trademarked brands by 12.5 per cent of families buying ready-to-eat cereals, 26.8 per cent of those buying concentrated orange juice, 47.2 per cent of coffee buyers, and 75 per cent of the families buying packaged flour. Think of it, 86 per cent of these families bought only two brands of flour and 44 per cent of them concentrated on one brand.

The School of Industrial Management at the Massachusetts Institute of Technology has delved into the problem more recently. The report, which is to be published shortly, will give marketing people their first answers to some long-posed questions, such as whether some families incline toward brand loyalty while others do not, is brand loyalty linked with store loyalty and what effects do "deals" have. Four types of food products were included in the items studied. Another interesting research [10] into consumer buying decisions was made recently by the Survey Research Center at the University of Michigan. One finding was that only one out of five buyers of durable goods remembered reading advertisements about the product they bought. So the advertisement that alarms a reviewer may be the very one which the average person does not even notice.

**My ninth and last point** is a plea that you drop ideas about advertising being wasteful of the public's money. The Health Information Foundation has just released figures on a survey showing that many doctors blame advertising for what they consider too high cost of certain products, some even saying that advertising is largely useless.

Now it is to the credit of scientists in the field of public health that they feel a duty to watch over the poor man's pocketbook. But there is a great chance for error in reaching a valid conclusion, and unfortunately time and other duties seldom give them a chance to break down and analyze cost factors. The tendency is to look at the price the farmer gets and the price the housewife pays for the finished product in a retail store. All too often blame is put on the wrong cost factor.

The retail price of a food article is made up of dozens of cost factors. For instance, if you consider all the cost factors from the time the farmer plants a cereal grain like rice until you buy the finished milled product in a nice one-pound box, you wonder how the current advertised price can be as low as 18¢. Add another cent as the estimated cost of the government crop support program, for which you pay somewhere in your taxes. Is the minute fraction of a cent spent along the line for advertising this rice then a sin? And suppose there had been another fraction of a cent spent in enriching with vitamins and iron to permit a claim of higher nutritional value, would the total addition to the 19 cents of even one full cent for advertising and enriching constitute a hardship for the buyer? She pays that for a single pack of cigarettes or a few packs of chewing gum.

Now, let us be honest, the public has not been too worried, has it, about the burden the low-income groups have to shoulder in taxes to offset the government's purchase of over seven billion dollars worth of food surpluses or from the 2⅓ billion dollars worth of surplus farm products the government sold this past fiscal year at reduced prices, bartered, or gave away? [12] It is time we recognize that "the forgotten man" is now actively employed, earning good money, putting some of it regularly into savings, and having available a disposable personal income. Our biggest population group earns between $5,000 and $7,500.[13] Even some families whose income is under $1,000 own an automobile and some two.[4] Unless you take all these things into account you are in no position to begin to judge whether a company is asking an exorbitant or a fair price for its advertised product, or whether the consumer can stand that cost.

Where does all this bring us in our consideration of the question, "Does Advertising Need a Godfather?" As a sequel to the nine points we have discussed I would now summarize with a few simple conclusions:

1. Most advertising delivers products in reasonable range of claims for them. Consumer loyalty studies show a wide faith in these products because they have performed well.

2. The public is adept at spotting trick advertising statements, is amused at many of the coined words and phrases, is influenced in direct proportion to the net amount of real truth it sees in the claims.

3. Really serious errors, misstatements, or outright misrepresentation will not be repeated long, for they are quite certain to be challenged by competition or the public, and if not corrected will draw fire from the government. In the words of Lincoln, "You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of the people all of the time."

4. Gearing food advertising to buying urge requires a keen sensitivity to public beliefs about nutrition and to the opinions of eminent nutritional authorities who help shape those beliefs.

5. This nation's epochal economy and prosperity have been built in no small degree upon the demand established by good companies for good products sold by good advertising, developed by good people possessed of good business judgment. Like all of us, they are in business to earn a livelihood. For themselves and for their companies' stockholders—who may include you—they must make every dollar of expenditure bring home the greatest return. They know that in advertising a silent dollar is not a productive dollar. It must speak out. These people will accept justifiable criticism and take action. The criticism should be direct and individually to each company or, if the objectionable claim is

not limited to one company, to the association, council or institute for that branch of the industry. A letter from anyone in this room will get attention.

6. Advertising does not need a Godfather because it already has several in the regulatory bodies of government and business. They are vigilant bodies. They are effectively keeping advertisers reminded of what may constitute wayward claims.

Apart from them, advertising is now controlled by the power brakes of measured results it gets or does not get. Its claims are power steered by continuing research into motivation, buying habits, and customer reaction. As a result, the American public is enjoying new safety, as well as satisfaction, in its ride along the road of progress with advertised products.

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## Oklahoma Increases Its Personnel

Oklahoma's February Health Bulletin reports that more than 100 new employees joined the State Health Department during 1955 and that the number of provisional, or emergency appointments had decreased.

For the first time since the late 1940's, reports the bulletin, the Sanitary Engineering Division has all budgeted positions filled with the recent employment of three registered professional engineers for the water and sewage section, and of an assistant sanitary engineer and an entomologist for the vector control services. The latter have been carried on for the past 10 years by personnel loaned from the Public Health Service.

Also reported is the addition, during the latter half of 1955, of 18 new nurses, 13 to fill vacancies and six newly created positions.

The bulletin gives a number of clues to this favorable situation, among them, "Our outstanding gain of 1955 is the community organization or team approach to community health—physicians, civic minded individuals, schools, public health people forming a team to work out the health problems."

"The Personnel Division revised many job specifications, interviewed prospective employees at eight colleges, and universities, and revised the compensation schedule."

"The story of public health was brought to hundreds of thousands of persons during 1955—8,900 film showings in the 77 counties, for example."

# ACTION

HENRY F. VAUGHAN, Dr.P.H., F.A.P.H.A.

***All in public health will want to know about this promising new enterprise.***

The American Public Health Association has been concerned with housing from the Association's very first days. In 1876 at the St. Louis meeting the first of a series of appraisal forms was presented containing many items dealing with housing and environmental health conditions. Ten years later the Association sponsored and published the Henry Lomb prize essay on "Healthy Homes and Foods for the Working Classes." After the turn of the century, and while the conversion from rural to urban life was in full swing, Lawrence Veiller, rich with the experiences of the New York Tenement House Commission and the secretariat of the National Housing Association, rekindled our interest and effort with his publications, especially the Model Housing Law which continues as the basis of most housing codes. W. Frank Walker and others brought in the impressive correlations of bad housing and health, warning of the detrimental influence on tuberculosis, the pneumonias, and the infant death rate.

The problem came of age with the advent of the Association's Committee on the Hygiene of Housing, under the direction of C.-E. A. Winslow and his coworkers. Here emphasis was pointed toward two important facets of housing. While the technical factors of poor ventilation, room overcrowding, lack of sunlight, etc., were not neglected, the principles of wholesome and complete living with comfort were underscored. The stresses and strains of family and neighborhood compatibility and the esthetic and the social settings became as important as the control of the communicable diseases. A positive forward look replaced the old negative attitude toward family living. Second, it became apparent that the public health housing group could not work effectively in self-isolation, but needed to labor harmoniously with architects, engineers, builders, city planners, bankers, industry and labor, as well as units of government at every level of service. Thus teamwork was introduced into the problem of housing betterment.

But who is primarily effected by the plague of housing decay? As in the case of tuberculosis, it is a plague of the people and not merely an affliction of the health director or his department. We could never expect to control tuberculosis without the understanding cooperation of the public. Tuberculosis services, case-finding programs, hospitals and sanatoria, rehabilitation services, financial aid for the patient and family, and the health department itself exist only because the public believes in them as a means toward success in the struggle against the tubercle bacillus. Health education provides the thread that binds the program together so that failure is denied. Our American culture and our democratic processes welcome the presence of these adjunc-

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This paper was presented before a Joint Session of the Conference for Health Council Work and the Engineering and Sanitation, Maternal and Child Health, Public Health Nursing, and Statistics Sections of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 17, 1955.

tive voluntary agencies that have performed so admirably in the fight against disease and the unwanted hazards in our environment.

A review of housing conditions in any one of our major cities discloses the communicability of housing decay. Like measles among a susceptible population, it spreads persistently from block to block, from area to area, infecting all who have not previously succumbed. Epidemiologically, there is first the contagion of housing endodecay which encourages the use of damp, unlighted, and unventilated rooms and results in room overcrowding and insanitary practices. Second, there is the contagion of housing exodecay which begins with neighborhoods and blighted areas creating shabby properties with decreasing values to be shunned like an exotic plague.

Health people have primarily concerned themselves with the first stage of housing decay, leaving the attack against the second stage to regional planning commissions, housing authorities, and the like. There is dire need for teamwork and joint effort on the part of a voluntary agency together with the official groups. This is one reason for ACTION. Good housing is not a concept to be attained in isolation. It must be a part of a total civic planning engaged in by many agencies, stimulated and nourished by public opinion and action.

ACTION is a long-range program for a better America. Its creed states: "America is strong and rich. Her people eat well, dress well, play well. But many—too many—do not live well, because they live on streets and in neighborhoods that long ago started to decline, to grow shabby, and to decay. The death of a neighborhood is tragic, but the essence of the tragedy is that the rest of the community, too, often turns its back on such a neighborhood. For when a neighborhood starts to die, some part of the whole community dies with it."

Nearly half the 45 million nonfarm dwellings in this country need routine annual maintenance to remain in acceptable physical condition. Another 20 million require repairs and improvements and, in many cases, substantial rebuilding to prevent eventual slums. An estimated five million dwellings are slums today. Here blight has won its victory. The slums must be eliminated and replaced by new homes.

ACTION is the American Council to Improve Our Neighborhoods. It is a nonprofit, nonpolitical organization, the purpose of which is to replace public apathy and neglect with action. ACTION helps Americans to help themselves to better living. Those who work to improve their own living conditions will stop the spread of housing decay.

Incorporated in the State of New York, ACTION has a governing board of 60 directors representing many fields of activity—industry, government, education, finance, civic and trade organizations, labor, and public service. Under a paid president and executive committee, three divisions carry out the ACTION program.

1. The Research Division serves as a continuous stock-piler of facts and a central source for information on housing and related technical, economic, sociologic, legal, and financial findings so that industry, government, and home owners can tackle housing problems objectively. This is a new kind of source to which citizens, builders, municipal officials, or any other interested group can turn for the collected record of information, experience, performance, and result regarding various aspects of community development problems. The Ford Foundation has made a grant of a quarter of a million dollars to study "impediments to the provision of adequate housing and the means to remove these impediments."

2. The Information Division maintains a broad and continuous informational program to supply the facts of experience to show what has and can be done by individuals and groups of citizens to improve homes and communities. Its initial task has been the preparation of a national education program designed to alert Americans to the housing opportunities and problems we face. An educational program is being carried out with a multimillion dollar allocation of time and space obtained through the Advertising Council, the public service organization of American business.

3. The Field Service Division helps translate ACTION's national program into local community action, thus functioning as a connecting link between the American community and the resources of the Research and Information Divisions. Although every city has different problems and varying degrees of civic support, this staff can provide a general knowledge on housing research technics, code enforcement, legislation, community organization and planning. Often it serves as a catalyst to bring local forces together behind the common objective of slum prevention and clearance.

The analogy between ACTION and the type of voluntary agency so well known to all in public health is quite evident. The problem in this case is complicated by the multiplicity of groups which must be synthesized to deal with public housing. However, the situation is not unlike that which confronts us internationally in dealing with the health needs in underprivileged countries where nothing can be accomplished in improving health without the concurrent consideration of agriculture, education, social anthropology, customs, mores, etc. The challenge is great but can be met with diligence and discretion.

ACTION is considering taking its tough problems right to the people as we have taken the tuberculosis advisory and diagnostic clinic to the home area. The Field Service Division sees the need for local information centers and the first has opened in Cleveland. The establishment of such centers should be of great aid to the health department by providing the citizen with useful information, such as: (1) local sources of financing with details about ways the various plans operate; (2) simple suggestions in the planning of home renewal and the selection of materials suitable for the purpose; (3) local requirements as to building permits, occupancy, standards, etc.; (4) legal advice in connection with the acquisition and disposal of properties, title searches, lien laws, etc.; (5) education in ways to maintain the property after renewal; (6) information as to who in the community can do the various kinds of work and the extent to which local union rules and regulations apply; and (7) information on all of the various aids in the community, whether directly related to renewal activity or not, including such things as the Legal Aid Society, adult education, vocational placement agencies, Community Chest services, home economics extension services, and child care centers.

This is the type of cooperative service with which health departments are familiar.

How is ACTION being financed? As with most voluntary health agencies, by gifts from many sources. ACTION is largely seeking financial support through voluntary contributions from business firms and through grants from educational and from philanthropic foundations.

ACTION is a voluntary agency organized to assist in the elimination of slums, to conserve and rehabilitate existing housing, and to improve living conditions in neighborhoods and communities throughout the country.

# A Comprehensive Sanitation Personnel Training Program

MEREDITH H. THOMPSON, Dr.Eng., F.A.P.H.A., and FRANKLYN B. AMOS, M.D., F.A.P.H.A.

***The program that one state has created to improve personnel performance is briefly and usefully outlined.***

A comprehensive training program for sanitation personnel means training for all sanitation persons (engineers, sanitarians, sanitary inspectors) employed by both state and local health departments from the time of their first employment, whether as a trainee or permanent employee.

We think of the total training program of all health department personnel as a public health training program for New York State—not a New York State public health training program. There is a very significant difference between these two statements in that the training for New York State is by and for all health department personnel in New York State. Both state and local health department employees must participate in the operation of the training program to make it a success.

Training of sanitation personnel is only one part of a complete training program needed to be carried on for health department personnel. Existence of training for other disciplines is necessary for the sanitation training program to be completely effective. Coordinated and interdiscipline training is basic to the team approach of solving public health problems. A public health training program for the many disciplines has been developed and is in operation in New York State. It was begun for health officers in 1934, for public health nurses in 1936, for statisticians in 1938, for nutritionists in 1945, for health educators in 1948, and for sanitation personnel in 1951.

Physicians may receive a year's supervised experience and residency training approved by the American Board of Preventive Medicine. Such physicians may also be sent on stipend to an approved school of public health for one academic year. These two programs provide the field experience and academic training required for the physician to be eligible for appointment to a beginning position. A similiar type of preservice training is also provided for nurses, statisticians, and health educators. Inservice training covering academic and nonacademic courses is available or provided for these various disciplines. Nurses, in addition to receiving six months of supervised field experience and an academic year in public health nursing to qualify as a public health nurse, may also receive an additional academic year if they are to be responsible for supervising or directing public health nurses.

One program for nutritionists provides a 12 months' apprenticeship under the guidance and supervision of a public health nutritionist.

This is not the entire scope of the training provided for all disciplines, but it will give a quick view of the broad field of training covering all disciplines. These public health training activities are coordinated and directed through the Office of Professional Training.

Since it is felt that training for any specific group of personnel can best be planned by a person of that particular discipline, there are specialized train-

ing personnel in most of the disciplines. Sanitation has one person spending full time on planning, coordinating, directing, and conducting sanitation training.

Our plan for training sanitation personnel was developed by a committee of 12 under the guidance of Joseph F. O'Brien, M.P.H., on loan for this purpose to the New York State Department of Health from the Public Health Service from 1949 to 1951. The committee consisted of physicians, engineers, and sanitarians, representing the state, county, and city health departments and a university representative.* The committee determined the training needs of and made recommendations for providing training for sanitation personnel. It then became the responsibility of the sanitation training director to translate the determined training needs and recommendations into an actual, realistic, and practical program.

Training for sanitation personnel covers some preservice preparation, but is predominantly concerned with all the phases of inservice training.

### Preservice Training

Preservice training is concerned with the preparation required for a person to be eligible for appointment to a beginning permanent position. Preservice training is provided for sanitary inspectors only. The beginning permanent position of sanitary inspector in local health departments requires a high school education and two years of public health experience. These personnel are usually not able to secure the two years of experience. Consequently, a training course of three months, approved by the New York State Public Health Council, is provided, which is accepted as one year of experience. This training is offered at the New York Field Training Center, Mt. Vernon, N. Y., a cooperative venture of the Public Health Service and the New York State Department of Health. The sanitary inspector is then granted a waiver by the Public Health Council from the requirements of the second year of experience so that he may be employed as a trainee by a local health department and secure the second year of experience.

### Inservice Training

Inservice training is provided to permanently employed personnel to keep such personnel fully competent in their present positions and to prepare them to assume more responsible or more specialized positions. The programs cover orientation through short, nonacademic and academic courses to a full year of academic study, leading to a master's degree in sanitary engineering or public health, depending upon the need of the person in his particular position.

Orientation to the department, bureau, and job activities is scheduled for a period of three months, as soon after permanent employment as possible. Approximately one week of this period is spent in units of the health department other than sanitation. This provides the new employee with the over-all objectives, policies, and activities of these various units. It will also provide him with the necessary background to assist

* The plan and work of the committee was reported in the April, 1952, issue of Modern Sanitation entitled "New York State Training Program for Sanitation Personnel" by Mr. O'Brien and Dr. Amos.

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This paper was presented before the Engineering and Sanitation Section of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 18, 1955.

him in determining where and how sanitation fits into the total picture of the health department and of public health.

Each person then receives approximately 11 weeks of orientation in sanitation. During this period he spends three weeks in the central office, where he is informed of the purposes and policies of the bureau and the various sanitation activities carried on. Each program director tries to point out how each phase of sanitation interlocks to produce a completely coordinated sanitation program. The following eight weeks are spent in various field offices in observation and participation. It is important that during this period that the new employee should not be assigned to any one specific job for an extended period of time. The purpose is to have the employee observe all field activities in order to see how academic learnings are put into practical use—not to gain competence in any one phase of sanitation at this time.

This is the first and formal part of orientation. However, this orientation is continued during the succeeding several years while on the job. This second part of the training might be classified as on-the-job training. The employee will periodically be assigned for varying periods to work in water plants, sewage and waste treatment plants, milk pasteurization plants, and other sanitation facilities.

What is the reason for this second type of on-the-job training? Up until about 10 years ago personnel joining the health department had a varied experience, including a good knowledge of the operation and maintenance problems of water and sewage treatment plants. Today, however, most new personnel are recent college graduates, with little or no field experience. Consequently, if they are to do competent water plant inspections, it is necessary that they first have some practical experience in the operation and maintenance of such facilities.

Short, three- to 10-day, nonacademic courses are developed and conducted for engineers and sanitarians by the sanitation training unit of the department. Courses have been conducted covering epidemiology; basic bacteriology; bacteriology of water and sewage; bacteriology of milk and food; sanitary chemistry applied to water, sewage, milk, and food; statistics in sanitation; statistics workshops; refrigeration; dairy farm sanitation; milk pasteurization plant sanitation; food sanitation; public water supplies; basic radiological health; radiological health instrumentation; educational methods; public speaking; public health administration; etc. The content of the short courses is developed with the help of the participants and directed as much as possible toward their specific needs in relation to the goals of the health department. A 10-day course usually is conducted in two one-week sessions several months apart because of the inability of personnel to be released from the job for a continuous two-week period.

The short courses are held at various points throughout the state, so located as to accommodate city and county health department personnel with a minimum of travel and expense. The instruction is provided by varied persons. In some courses, such as "sanitary chemistry," instruction is provided entirely by health department personnel, while the session "statistics workshop" is presented by university faculty.

The sanitation training program, is in general, planned one year in advance. This makes it possible not only to notify all sanitation personnel in the state of proposed courses, but also for such personnel to plan for necessary approval to attend. In cases of city and county units, it means planning for the necessary budget to attend such courses as desired. Each person, after studying

the schedule of proposed courses, makes application to attend those courses in which he is specifically interested. No pressure is exerted to require attendance. Actually, courses are usually oversubscribed and it is necessary to defer applicants and plan to repeat the courses. Attendance at courses is limited to from 12 to 20 persons, depending upon whether or not field work is involved.

All state health department personnel have blanket approval of the bureau director to make application for and, if accepted, to attend those courses in which they are interested. Generally, each person may attend two one-week sessions per year.

Each session is evaluated to determine if the needs of the group were met and what changes can be incorporated in future sessions so as to improve the session when again offered.

Multiple-discipline training is provided by the department for physicians, engineers, nurses, and other members of the health team covering subjects of interest to them as a working team. A series of annual institutes are presented on Public Health Administration. The institutes cover such areas as communication, program planning, and carrying out public health programs. These subjects are presented to and discussed by the team (physician, nurse, engineer, sanitarian, health educator) which is confronted with the problem.

Formal academic training for selected engineers and sanitarians at universities and colleges is provided. Health department personnel may take university-sponsored and conducted courses with health department significance. Tuition for such courses is paid by the State Health Department. These may be special university conducted, short courses, such as industrial hygiene or air pollution, for a two-week period, or a regular academic course conducted several days or evenings throughout the semester. Funds are also available for up to a full year of academic study for engineers and sanitarians for a master's degree.

In addition to inservice training for engineers and sanitarians and preservice training for sanitary inspectors, inservice training is provided for sanitary inspectors and allied field personnel. One-week courses are conducted at the Training Center and at decentralized locations throughout the state covering insect and rodent control, food sanitation, rural sanitation, refrigeration, milk sanitation, and other areas. Separate two-week courses are conducted for Grades I, II, and III milk inspectors. The Grade I and Grade III courses are conducted by the State Health Department, while Grade II courses are cooperatively planned but university conducted.

Training is also provided for: Grades I, II, and III water and sewage treatment plant operators, swimming pool operators, and similar allied nonhealth department personnel. Certain water and sewage courses are planned and conducted by the state and local health departments, while courses for the Grade II operators are planned by the state and university and conducted primarily by the university.

A comprehensive training program must be one of diversity and balance, meeting all the needs of all sanitation personnel. Training must be provided periodically from the day of employment with planned orientation, through short health department conducted nonacademic and university conducted academic courses, to at least a full year of academic study leading to a master's degree. With this type of a comprehensive training program we may expect continued competency from qualified personnel and an expansion of personnel abilities into the ever new fields of engineering and sanitation in public health.

# Group Learning in Public Health Mental Health Practices

MARIE GOIK, R.N., and HENRY H. WORK, M.D.

***This is a major contribution to methods of inservice training of professional personnel in public health.***

Teaching people in groups has long been used in the field of public health, both in inservice education of staff and in assisting patients to understand their problems. More recently there has been added to this concept of teaching a better knowledge of the psychology of group behavior which has become organized under the heading of "Group Dynamics." We have learned from selected studies that not only can knowledge be disseminated to a group but that the group learns from other members and with other members and that part of the learning takes place in the interactions between members of the group.

Because of studies of this sort, it has been possible to more carefully plan the formation of a group and through a study of the roles of leaders and members of the group it has been possible to understand how learning takes place and how to speed up this learning process. The application of this knowledge makes it possible to arrange the size and frequency of meetings of groups, as well as to utilize an understanding of the kinds of people who are best suited to teach. This becomes particularly important in public health practice because of a rather marked emphasis on inservice education which must always be geared to an ongoing service program. We have chosen, therefore, to present a teaching experience which was integrated with the day-to-day program of a health department in order to illustrate its use to improve the service at the same time it was being given. It should be noted that this was a special project but that it was fitted into a busy organization, suffering from the ordinary service pressures, and was complicated by the usual need for more staff and more time.

Because of these normal exigencies, it is worthwhile considering briefly the administrative mandate and sanction that is needed to include such a teaching program within the general work. It is obvious that any deviation from day-to-day work must be accompanied by a planned and authorized permission from the administrative head. Administration must not only encourage such an inservice program but explain it and interpret it, particularly when the project may well have a better budget and no demand to produce service or statistics. Adding such a project without the specific permission from the administrative head to carry out procedures would be foolhardy. Obviously, this is facilitated where the administrative head has either participated in similar experiences, or is willing to take part in it.

Certain administrative difficulties can be anticipated. There will be questions concerning the number of people to be involved and the demands of time upon their services. The time factor requires particular thinking through because of other demands which are always present for the time of the individuals concerned. Not only is there a continuous conflict with ordinary service demands, but there may be conflict between the teaching program of a special project

and those of other divisions of a total health unit.

Two years ago we described a project in the teaching of mental health in a public health setting. This project took place over a five-year period in the Louisville and Jefferson County Board of Health. The setting was chosen since it was an active, ongoing health program which included a series of well baby clinics under the aegis of the Maternal and Child Health Division. The project was designed for nurses and doctors to increase their knowledge of mental health procedures involved in work with mothers and children of this age group. The student group included both graduate and student nurses and medical students as well as residents in pediatric training. These various groups were associated with the teaching procedures over different periods of time. The medical students were present for six individual sessions at weekly intervals. The pediatric residents each operated certain of the well baby clinics for six-month periods at weekly intervals. The graduate nurses were those entrusted with the actual operation of these clinics and to some extent, with normal turnover, were present throughout the full phase of the project. The use of the word "student" throughout the remainder of this paper will be taken to include nurses and physicians and the students in both disciplines.

The teaching experience that will be described included didactic seminars to give a body of knowledge of growth, development, and relationships between mother and children and also active participation in a clinical experience in a well baby clinic.

The teaching staff of the project consisted of a pediatrician-psychiatrist, a psychiatric social worker, and a public health nurse trained in mental health nursing. It was felt that their background would include a core of knowledge concerning growth and development and personality development which could be utilized either separately with individual professions or jointly with the entire group. The planned goals of the project included the learning of better ways of teaching physicians and nurses; the integration of the generalized public health nurse into this teaching program; and the learning of methods in the care of mothers and babies that could be applied in any public health setting to increase the mental health aspects of the service rendered in such clinics.

It is obvious that certain professional skills were absent from this teaching team. It was often felt that there was a greater need for psychological evaluation of patients in order that the case discussions and therapeutic cues might be expanded. Similarly, the consultation available from a nutritionist could often have been used. To some extent these services were available on a consultant basis outside the actual time of the teaching experience.

The major teaching effort concerned the training of residents in pediatrics and the public health nurses who worked in the well baby clinics. At the beginning of the project seminars for these two separate groups were planned in order to give them a general understanding of the growth of a child and the mental health problems which children and their mothers faced. Such seminars usually continued over a period of a year or so for each individual group.

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This paper was presented before a Joint Session of the Maternal and Child Health and Public Health Nursing Sections of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 17, 1955.

The clinical teaching was done in the well baby clinics. One or two residents were assigned as physicians to each individual clinic and the residents so assigned would remain in the clinic for a six-month period. In this way they would become acquainted not only with a group of patients, but with the particular group of nurses who operated this clinic. This group of nurses, would be having a seminar with the social worker or mental health nurse at the same time. The entire team would be present during the course of the clinic and would directly associate themselves with any member of the operating group in contact with the patient. A rather small amount of work was done directly with patients in order to provide case material for later discussions.

Following the close of the working period of the clinic, the staff would gather with the residents and nurses and a general discussion of the patients who had been seen would be carried out. It was expected that all members of the group would participate in the discussion and that there would be a sharing of knowledge about the patient, as well as of procedures that had been used. In this way case material was used to illustrate and make alive the knowledge gained through the seminar type of teaching. The fact that the nurses' work extended into the home was also utilized and some visits were made with them at their request.

We were aware in setting up this teaching program that there would be some impact of the size of the teaching team on those who were students. Certain factors were important in reducing the normal anxiety which the number and the psychiatric label of the team members engendered. One of these was a constant effort to keep all of the teaching patient-centered. It was obvious that in even doing so there were many instances where the students' personal needs came into the discussion and into some of the clinic operations. However, whenever this occurred, instead of the talk being individually centered, the effect of such feeling was shared with the group. It was, therefore, less of a threat. For example, a resident once identified with a child who was a thumbsucker and stated that he had been such a problem beyond school entrance. However, he did not believe that it was due to any insecurity in his home situation. To have probed his own home would have been difficult, but it was possible, by turning to similar examples in our clinic experience, as well as in the experience of some of the other members of the discussion group, to illustrate the commonness of insecurity and the thought that it did not necessarily have a bad connotation.

Equally, efforts were often made by members of either the nursing or medical disciplines to have the teaching focused on the other discipline. The teaching team carried the continual burden of effort in avoiding such situations by trying to make all knowledge a common experience and persistently seeking to involve everyone in a discussion toward the benefit of the patient.

In any such project there is considerable learning on the part of the teaching team, as well as those who become students. It is because of this learning that we report here our experiences and describe what we felt was the logical outcome of the teaching process.

Much of the teaching was based on the premise that although the three members of the team came from different and independent disciplines, there was in their training and experience a certain amount of basic knowledge of growth, development, emotional processes, and the principles of interrelationships between individuals—in this case, particularly between parents and children. Identification of the appropriate functions of each team member was important in establishing smooth work-

ing relations between the team members themselves as well as helping the student to clarify the teaching team members' contribution. This will become immediately apparent to anyone who starts to do inservice education with public health personnel and should be considered by both administrative planners of a teaching experience and the individual members of such a team before they begin any operation.

The appropriate function of the various members of the team demonstrates itself immediately in the preparation for the teaching experience. With us this came about through a preappraisal of the level of the group of students by the various members of the team. It is certainly done best initially by the appropriate member of that discipline and then reviewed as a group. It is not always easy to survey the student group adequately before beginning operations, but it is obvious that without some appraisal of the students there may be a greater loss of time later on.

Preappraisal becomes important for two reasons: one concerns the various disciplines being taught. It is necessary to try to bring them to comparable levels in order to coordinate their function. In our group we were dealing with nurses whose median age was 48 and the residents in the late twenties. The nurses had a median experience of 12 years in public health nursing and the residents had no immediate practical experience. The nurses preferred to work with a single contract physician who had a well organized plan, rather than participate in a teaching experience with new physicians. This was understandable because of the direct service demands on their time. It was interesting to note that the nurses seemed to be more accepting of the social factors which influence behavior in a family, despite the fact that they lacked some knowledge of the newer concepts of growth and development which the resident physicians had.

Another reason concerns the needs of the various disciplinary groups for special help or strength from that member of the teaching team which best represents their interest. After some discussion we met this in terms of seminar teaching where the particular disciplines were somewhat separated and the teachers were matched to the student groups. As noted earlier, the seminars were planned to run concurrently with the clinical experiences in an effort to cover the principles. In these seminars courses in personality development were planned for both student and graduate nurses and for medical students and residents. It took considerable care not to underestimate the knowledge of the various groups in the early stages; whereas in the later stages of any seminar proceedings it was found necessary to check from time to time to see what the learning experience had been and to see whether or not the instructor was proceeding too fast.

From the very beginning the teaching team met at least weekly in order to discuss their own experiences with individual disciplines, as well as the group teaching in the clinics. This was useful because observation of clinical experiences could be taken back to the seminar type of teaching in the form of principles, as well as subsequent illustration of principles in later clinical experiences. This amounted to an ongoing appraisal of the students.

Since the learning experience included both change in feelings and an addition of factual knowledge, it was apparent that there were needs for evaluative tools. An experiment was made to achieve some evaluations on the group who had had continuous contact with the teaching team. Tests for content, rigidity, and anxiety were given to the nurses and to a control group of nurses. We were aware, however, that these psychological testing materials could

have been broadened and, in general, if one is interested in the outcome of his teaching, such tools should be applied to the students both before and after the teaching experience.

One should be aware of conflicts which may well beset the teaching process. These evolve more in the ongoing situation than can be anticipated early. Besides the pressures of time, there are other pressures which must be considered. Not only may there be a lack of interest in the particular program or a real inertia to learning, but there may very well be conflicting learning pressures, as well as those of time. A variety of excuses relative to time and pressures will be used to explain a lack of interest or to demonstrate a passive resistance to the teaching program.

Any program that uses team teaching and a mixture of disciplines on the teaching team must face the opposition that normally arises in a group of students when they are being taught by someone from another discipline. There is both overevaluation and underevaluation of the skills of members of another discipline, but they may equally result in a resistance to being taught by such people. This we found more true in terms of doctors' resistance to being taught by nurses or social workers than we did the converse. On the other hand, the physician who is teaching nurses must be aware of a certain aura which surrounds his words and not be deluded by what seems to be acceptance. It is obvious that this is changing so that there will be a different approach to nurses of a newer generation from that used with those who were taught their principles of nursing practice earlier.

All this is important because in the planning of such a teaching experience there should be left time and a readiness to tackle some of the conflicts head-on with the group, where they cannot be eliminated by earlier administrative planning. This kind of an approach is often most necessary in the early stages of a program, since once a program becomes accepted, the time limits within which it functions also become an accepted part of the day-to-day activities of the group. However, the personal experiences of the students, as well as the approach of the teachers, continue to cause ongoing problems and in the planning there must be left time to consider and discuss and think of methods of meeting these problems.

For example, we discovered that at the beginning of each year it was necessary to sit down with both the student groups and the administrative people from the health department in order that everybody might become familiar with the operations and functions of the other persons. The MCH director would discuss the policies and framework of the health department. The mental health nurse discussed the role of the public health nurse, and the psychiatric social worker discussed community agencies, casework, etc. It was necessary, however, to return to these same discussions and amplify them in terms of the clinical material as the year progressed.

As mentioned previously, our approach to the solution of these problems lay in the attempt to use the patient as the focus of all teaching. The mother and her infant or small child were chosen as the type of patient combination which best represented the varying phenomenon of growth, emotional development, and the establishment of relations between individuals. Then there was added to this the types of relationships that physicians and nurses make with patients. The only great deficit in terms of case material was the lack of male figures in most of our contacts. We saw very few fathers in our clinics.

The seminars sought to demonstrate the known facts about physical and

psychological development of the individual and the types of relationships which were established during the growth process. In these seminars case examples were outstandingly used and any audiovisual material which could contribute to the understanding of the growth was added. Constantly our case material in the clinics was linked to the types of mental health films which illustrated the principles involved. Equally, the films were chosen to give an understanding of case material as it was being seen in the clinic. Every attempt was made to encourage the members to bring in personal case material and, following the first few sessions of explanatory didactic material, the instructor gradually led the group around to its own immediate discussion of the case material, which usually proved to be constructive.

It was necessary to have the clinical experience contemporary with group teaching. Ideally, it is always valuable to have formal teaching precede practical application. Since this is rarely possible, we planned to utilize the difficulties of our clinical experiences and to bring them back into the seminar. Actually, both residents and nurses saw in their clinical experience certain things that were not covered in the seminar teaching and were able to bring them to our attention and correct those parts of the teaching where principles were not well linked to practical application.

Teaching in psychiatric work often consists of the therapist seeing a patient and then reporting to his supervisor. We organized our clinical contacts on a direct basis and violated this premise by sitting with the physician or assisting the nurse in her direct contacts with the patient. We discovered that when one of the instructor teams sat with an individual in a treatment situation, or examination, or one of the technical procedures, such as immunization, that this observation gave rise to a much better appraisal of the clinical approach. It also gave an opportunity for the instructor to evaluate the patient and the therapeutic approach and carry this into the later discussions.

In addition, it was sometimes useful to assist an individual who became mired down in contact with a patient. A resident physician who had become aggravated at a mother who seemed not to understand his questioning was grateful for the instructor taking over the interviewing. He was amazed when the mother began to talk about what was really on her mind and interfering with her listening. Having previously described her as "stupid," he was surprised to see the emotional block concerning her relation with her mother, who was sitting beside her, that had interrupted his conversation. He was equally surprised to find her pouring out a well ordered flood of words on this and other subjects which convinced him of her lack of stupidity and also demonstrated the difficulty he was having. A few demonstrations of picking up the clues that patients drop became a dramatic way of teaching the residents and nurses how to pay attention to the minor and often seemingly insignificant comments of the patient.

Certain of the students resented the inclusion of the teaching team in their patient contacts. Particularly this was true in the beginning of each of the student groups over the years. It became necessary, therefore, in the planning, to organize an approach that explained and took care of the students' needs or offered him or her help as needed. Over a period of time the students became more and more receptive to this, and it was possible to assist them at a time when they felt comfortable, both knowledgewise and feelingwise. We also were pleased to see that there seemed to be a carryover from one group of residents to the others,

and similarly with the nursing groups.

We have already mentioned the evolution of our concept of teaching in a postclinic conference. Here was an opportunity to bring together not only the cumulative knowledge and feelings of the various professions and members of the service group, but an opportunity to discuss freely all of the patient-centered material. Many of us are much more comfortable in our discussions when a patient is not present. Members of this conference became more comfortable as their individual seminars had carried them forward with a body of knowledge. Over the years we ourselves learned that the opportunity to talk about the patient depended upon our being alert to the contributions of the various disciplines.

As a part of the team planning which went on throughout the year, not only the subject and content material of the postclinic conferences, but the reactions of the various members of the group to one another were discussed. This was done extremely slowly over a period of the student's contact with us. Such planning included both bringing out the shy or timid members of the group, as well as assisting those who were overeager in their presentation from dominating or interfering with the general conference.

These postclinic conferences tended to begin very commonly by discussing a mother who had stirred up anxiety throughout her path through the clinic. Such a mother would have bothered nurses with questions, would have stirred up the concern of the physician, and may have precipitated trouble because of the manner in which her child reacted to her overbearing anxiety. As time went on, however, and the physicians and nurses learned how to cope with this type of mother, it became possible to point out certain more shy, timid, and withdrawn mothers who also were having a difficult time in the child-rearing process and who were affecting the child because of their concealed anxiety.

As might be expected, because of their pathological training, the physicians were interested in the bizarre and the unusual. The nurses, on the other hand, expressed their greatest interest in trying to understand and cope with situations which were difficult for them in the home situation. The teaching team did its greatest service when they pulled together the combined concerns of the physicians and the nurses and made it possible for each one to see that the other one had difficulties and that there was a common path and a united path to help for the patient.

An equal burden on the teaching team was to remain aware of patients who illustrated more dramatically than usual a specific principle of growth change or the change in the relation of a parent and a child. An extremely overanxious mother who lacked the ability to control her child brought him to the clinic with a harness and a rope. The nurses who had seen this child in the home were prepared for this experience and not as strongly upset by it as was the resident. The therapeutic experience of seeing this mother frequently, which was planned in the general conference, led to a change in her behavior because the physician could calm her concerns and permit her to be more firm with the child. This patient continued to be the subject of discussion as often as she appeared in the clinic. In time, it became possible to understand her and to tolerate the feelings of each of the physicians and the nurses in relationship to this mother. To have tried to tackle this on the basis of teaching the physician alone or helping the nurses alone would have solved only part of the problem. At times, the nurse who visited this mother led the group in trying to understand the patient. At other times the physician was

able to explain his change of feeling and he became the focus of the group interest. At all times the sharing of this common feeling of frustration, and then understanding about this mother, was the focus of the group activity.

In this sense it was possible to accomplish much more rapidly both teaching and assistance to the patient because of the fact that all members of the service team were represented in the group conference. Equally, the varied functions and knowledges of the teaching team came continually into play in an effort to understand the members of the various disciplines represented by the teaching team. No clinic passed in which there was not some opportunity to bring out and elaborate a principle either of growth in the child, development of relationships in the parent-child combine, or progress in the relation of therapist to patient.

Frequently we sat in our planning conference trying to assess what had gone wrong with any particular group meeting. We were not in a position of shifting personnel in order to obtain a better balance between doctors, nurses, or instructors. We could, however, plan the introduction of known case material in order to balance the kind of clinical experiences that occurred on any one occasion. Each of us had a fund of knowledge about the individual students and case material to utilize. We gained much when an occasional visitor came in and commented on our experiences, particularly when we had become blinded to the approach to any group or individual.

Dividends from such teaching come but rarely. A continuing sense of satisfaction in the smooth operation of a conference, however, often continues to pay, even though the outstanding and dramatic examples for congratulation are not frequent. Perhaps the best dividend comes in the much later comments and observations of individuals when they have had such an experience and, quite unaware, have profited by it.

## Conclusion

The paper describes a five-year experiment in teaching mental health practices in a public health setting, a well baby clinic. The students included nurses and physicians. The points made were: (1) there must be good administrative sanction for such a venture; (2) the theoretical teaching of the students is best covered by a multidisciplinary team, but the individual disciplines are best taught in seminars by members of their own discipline; (3) the major educational experience included the above mentioned seminars, direct clinical supervision of the students, and, finally, postclinic conferences where all members of the team met, both nurses and doctors, in a common discussion period. Out of this conference came the practical effectiveness of both the teaching experience and the public health application of the concept.

ACKNOWLEDGMENT—The authors wish to give due recognition to the participation of Genevieve Artz, who was the psychiatric social worker throughout the term of the project.

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*American Journal of*

# PUBLIC HEALTH

*and the Nation's Health*

Official Monthly Publication of the American Public Health Association, Inc.

Volume 46 | March, 1956 | Number 3

## More on Fluoridation of Water

It may appear unusual to have an editorial twice on the same subject within a period of some six months. The question of adding fluorides to public water supply systems remains, however, so pregnant an area for battle that additional editorial comment on the progress in this field is warranted. The summary of the present situation on control experiments on a vast scale, which Drs. Ast and Schlesinger present in this issue, adds comprehensive scientific data to the already large amount of information on the subject. The decision by the City of Chicago to begin the application of fluorides to the public water system of that great area is additional testimony to the fact that responsible public health and water officials are arriving at similar conclusions after careful appraisal of the dental decay problem.

The Board of Health of the City of New York has within the last sixty days recommended the application of fluorides to the public water system of New York City. If adopted, this policy should result in affording protection to the millions of children and adolescents in a service area supplying water to well over eight million people. In the New York City area debate and contest obviously will result from the firm recommendation made by the board and by the health commissioner. All of the usual arguments against its use will once more be summoned up. It may be prophesied that the city will ultimately take this step in protecting the dental health of this great community.

Scientific interest in fluoride defects will of course continue unabated. The continuing analysis of such effects, if they exist, would be the natural consequence of exposing human populations to fluoridated domestic water. Fortunately the results of such studies, mounting as they are, all point to the same general conclusions, namely that in the dosages currently used, the assumed hazards to the human population are either nonexistent or negligible.

In this connection a recent study of roentgenographic findings of a ten-year study in a high fluoride area is of major significance. In the high fluoride area of Bartlett, Tex., 8 ppm of fluorides have been used in the drinking water of natural occurrence over many years. Nicholas, et al, have recently reported on the results of the Bartlett experience vs. those in a controlled area of Cameron, Tex., where the

water supply contains 0.4 ppm fluorides. The summary of their findings * is recorded here for permanent reference.

"Excessive fluorides in a water supply may produce roentgenographic evidence of bone changes, but the observable changes—

1. Occur in only a select few (approximately 10 to 15 per cent of those exposed).
2. Are slight, often difficult to recognize, and in most instances equivocal in degree.
3. Bear no resemblance to the bizarre findings described in some cases of long exposure to cryolite or rock phosphate dust, nor to those attributed by some investigators to excessive fluorides in domestic water supplies.
4. Are not associated with other physical findings, except for dental mottling in persons who resided in the high-fluoride area during the tooth formative period (up to 8 years of age).
5. Cannot be definitely ascribed to excessive fluorides alone.
6. Do not necessarily occur even though the fluoride content of the bone may be six times that of 'normal' bone.

"There is some indication that the ingestion of excessive fluoride in water and the 'fluoride effect' of the degree encountered in this study may, on occasion, have a beneficial effect in adult bone, as in counteracting the osteoporotic changes of the aged."

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* Nicholas, C. L., et al. A Roentgenologic Study of a Human Population Exposed to High-Fluoride Domestic Water—A Ten-Year Study. Am. J. Roentgenol. 74:874–884 (Nov.), 1955.

## Some Important Lessons from the Lancaster, Pennsylvania, Paratyphoid Fever Epidemic

It is heartening indeed to realize how unusual the recent milk-borne epidemic of paratyphoid B in Lancaster, Pa., seems to us today. Even a decade ago such an outbreak would not have evinced either surprise or particular interest. Now there is almost an air of nostalgia surrounding the outbreak as we realize that "it can still happen here!"

The epidemic was fortunately mild in so far as clinical manifestations were concerned. It was, however, numerically extensive with over 200 symptomatic cases reported and another 40–50 less manifest infections being uncovered through epidemiologic investigation. The age distribution, in the classic milk-borne epidemic pattern, was heavily weighted in the earlier years, the effect being emphasized by the fact that the dairy involved served most of the local schools. The chronological characteristics of the epidemic curve exhibited a rapid rise in the numbers of cases according to date of onset, a modal period of four days during which a considerable number of new cases was occurring, and then a more gradual falling off of case incidence.

It is interesting to note that the value of local full-time public health supervision was again demonstrated, for the state district medical director in Lancaster mobilized and directed the investigation of the outbreak with commendable speed: the first aggregation of cases was reported on Monday, the preliminary field investigations of 17 households had been completed by late Tuesday evening, with the data indicating the probable involvement of one dairy, and on Wednesday that dairy was persuaded to cease operations. Of course this meant utilizing other trained public health personnel. And the second lesson to be learned is the old one

of the need for a multidisciplined team approach in any epidemic study. Public health nurses, laboratory technicians, sanitarians, a public health veterinarian, and a public health educator all supplemented the work of the public health physicians directing the investigation. And each of the disciplines contributed significantly toward the control and solution of the problem.

Of particular significance was the contribution of public health laboratory workers who established at least two significant points that would not have been clarified without their help. One was the usual winnowing out of unrelated cases with similar clinical syndromes, reported during the same interval, which would otherwise have confused the epidemiologic picture. There were 11 such cases, including several typhimurium and other strains unrelated to that causing the epidemic. And, second, through securing fecal specimens from sample populations on the involved dairy route and on a distribution route from another dairy it was possible to demonstrate the very considerable number of missed cases and inapparent infections on the former with a complete absence of both on the latter.

Perhaps the third lesson which might be learned from this episode is that the present trend toward "automation" does not necessarily entail the complete protection which it may seem to imply. The operation of this plant, like most other dairy plants, might seem on paper to be a "closed system." Yet on detailed review of actual operating practices it was amply evident that occasions not infrequently arose for manual adjustments, inspections, etc. To these human elements, which intrude themselves even into machine operation, must be added the additional hazard of a cross-connection with an unapproved water supply, failure to provide leakproof valves between the raw milk tank and the pasteurizing vat, and at least one instance just prior to the outbreak of apparent failure of normal operation of the temperature recording device. So much for the lamentable vulnerability of machines and systems.

A fourth lesson highlights the difficulty of continuous milk sanitation and investigation of a milk-borne epidemic in the face of divided authority. In Pennsylvania, milk sanitation is a responsibility of the Department of Agriculture. Although the local (part-time) health officer and his staff in the city department of health have been securing satisfactory weekly samples from the plant, this was obviously inadequate protection. Furthermore, when the State Departments of Agriculture and Health undertook to locate the source of the break in normal protective procedures, the dual authority made that investigation somewhat cumbersome. Also there was an impossible public relations situation in that the public demanded and expected health department action after people got sick, yet the authority with regard to the point at which the break occurred (the pasteurizing and processing plant) belonged to another department.

This occurrence must have a salutary effect on the attitude of many health officers toward the continuing need for the protection of milk supplies to safeguard the public health. This particular barrier against disease may have reached a maintenance level, but still requires our attention, our interest and adequate legal authority to act before as well as after misfortune occurs.

# Committee on Eligibility

It is a satisfaction to report to the Governing Council on a good year of the Committee on Eligibility. The systematic routines developed in recent years for the responsibilities of the Committee on Eligibility have been continued and strengthened in some respects and we are confident that the procedures used are sound for this important task. The skill, thoughtfulness, and diligence of the Association staff have been essential to the function of these routines. Their work cannot be praised too highly.

Members of the Governing Council are reminded that the Committee on Eligibility consists of one Fellow elected by each section serving for overlapping terms of two years. An additional Fellow is appointed by the Executive Board to serve as chairman and to be a representative for the unaffiliated portion of the APHA. The duties of this committee consist in judging the eligibility of Fellows, members, and other constituents, including Life Members and Affiliated Societies.

During the 12 months ending August 31 your Committee on Eligibility approved 881 applications for membership. The corresponding number in 1954 was 924 and in 1953 it was 1,149. We have been alert to the fact that some few applicants seem to think of membership in this professional society as something to exploit for their own benefit. It is gratifying that the vast majority of applicants are interested in service to the professions and to the cause of public health.

In terms of new members in 1955, first honors go to the Public Health Education Section which brought in 116 new persons. This was followed by the Engineering and Sanitation Section with 104. The over-all membership of individuals in the Association is 12,651 as of September 1, 1955. The Health Officers Section is the largest, followed by the Laboratory, Public Health Nursing, Public Health Education, Engineering and Sanitation, Medical Care, Unaffiliated, Epidemiology, Food and Nutrition, Maternal and Child Health, Statistics, School Health, Occupational Health, and Dental Health.

The Committee on Eligibility has met twice during this conference to consider for Fellowship the names of 189 applicants as published in the October issue of the American Journal of Public Health. Of these, five applications were not approved by the various Section Councils or by the Executive Board, which appraises applications for Unaffiliated Fellowship, or by the Committee on Eligibility.

It is unanimously recommended by the committee that the remaining 184 applicants whose names have been placed before you be elected to Fellowship in the American Public Health Association. Again, I can report that the committee believes that in the case of each individual the appropriate By-Law provisions have been met and I can assure you that the qualifications have been reviewed in a highly systematic manner, going back over a period of some months.

Last year the Governing Council approved 157 applicants, compared with the 184 recommended this year. The comparable numbers were in 1953, 165, in 1952, 230.

The committee also recommends that the three members and two Fellows whose names appear at the end of the printed list of Fellowship applicants be added to the roster of Life Members.

We are glad to report that the wish of the Governing Council expressed sev-

Report of the chairman of the committee to the Governing Council, November, 16, 1955.

eral years ago that there should be strong public health associations in each of the states is bearing fruit. After consideration of its history, constitution and by-laws, membership, financial status, and its plans for the future, we recommend the election of the Mississippi Public Health Association to the status of an Affiliated Society as provided under Article III of the By-Laws. We similarly recommend the election of the Wisconsin Association for Public Health.

The committee considered the application of the Montana Public Health Association. It was complete and satisfactory in all respects except the proportion of APHA members residing in its area who had identified themselves with the state association. There is evidence that this can soon be corrected, and we recommend that as soon as it is demonstrated to the satisfaction of the Executive Secretary that the By-Laws requirements concerning this have been met that the Montana Public Health Association shall become an Affiliated Society.

In two other states, Nebraska and Maryland, it appears that an application will shortly be forthcoming under the new APHA By-Laws. There are also definite stirrings in Indiana and Kentucky which may easily produce applications within the year.

The committee has given particular attention to the Honorary Fellowships, our purpose being to keep them valuable by careful selection of the recipients and useful to the cause of public health through their judicious distribution on a geographical basis. A subcommittee under the chairmanship of Dr. Harald Graning studied these matters and reported that we have 44 surviving Honorary Fellows; among these, 31 are from Europe, including 19 from Great Britain. Other countries now represented include Brazil, Australia, Switzerland, Canada, Norway, Denmark, Venezuela, Sweden, Germany, Pakistan, Holland, France, Cuba, Yugoslavia, Ceylon, and India. The representation from Latin America and the Middle East is quite scant. The subcommittee made several recommendations of policy which were adopted by the committee for its future guidance.

The subcommittee also gathered and evaluated information on 14 leaders of public health in foreign lands, all of them outstanding persons. The committee recommends the election of six of these:

Dr. Henry Sigerist of Geneva, Switzerland, a leader in medical history and the study of medical care organization

Dr. Percy Stocks of London, England, known to all for his outstanding work in health statistics

Dr. Wallace Aykroyd of Rome, Italy. An Australian, he has worked in nutrition for nearly thirty years and is director of the Nutrition Division, Food and Agriculture Organization, United Nations

A. Denton Ogden, Chelmsford, England. A leading practitioner and student of sanitary science, widely known and admired in our own country and throughout the world, a former chairman of the Council of the Royal Sanitary Institute.

Dr. Aly Tewfik Shousha of Alexandria, Egypt. Long the head of public health work in the Egyptian government, he has also given distinguished service to the World Health Organization

Dr. Victor Sutter of El Salvador, who after excellent work in his own country, where he was minister of health, has become assistant director-general of World Health Organization.

The Committee on Eligibility feels that the membership and Fellowship of the Association are in a healthy state in this year of 1955. The committee looks forward to the consideration of additional Affiliated Societies during the coming year and will do its best to maintain the quality as well as the quantity of the Association roster.

RODNEY R. BEARD, M.D., M.P.H.
Stanford University Medical School, San Francisco, Calif., Chairman

A COMMITTEE REPORT

# Research Needs in Mental Health

Committee on Research and Standards

The first formal move between psychiatrists and public health men in standard setting came shortly after the war and at the time of the decline of the Evaluation Schedule and its widespread use. It was recognized that the Evaluation Schedule technic was losing its pertinence and that the grading and scoring and publication left a good deal to be desired. Nevertheless, it seemed wise to attempt to prepare a subschedule for the evaluation of mental health programs and one was drawn up by joint action of the American Psychiatric Association Committee on Public Health and appointees from the APHA. This joint effort consumed about two years of hard work. It resulted in a questionnaire in the usual form of the Evaluation Schedule, to be used as a supplement to it, pending the general revision of the schedule then contemplated but, I believe, never completed. The supplemental schedule has not been widely used, for the reason that the whole Evaluation Schedule has lost its popularity to a large extent.

This schedule contained material on the various phases of a mental health program. It stressed particularly in-service education of public health personnel, the use of consultants, cooperation and interaction of the health department with psychiatric hospitals and outpatient clinics and, in general, community organization for mental health purposes between voluntary and public services, particularly educational institutions. As is well known, the Evaluation Schedule has great difficulty in determining the quality of services; this subschedule was also largely a matter of recording presence or absence of service or plan rather than qualitative considerations.

This problem had something to do with the preparation of the series of manuals just in process by the Committee on Child Health which you have all undoubtedly seen. These manuals deal both with organization and content of program. They accentuate quality as well as mere presence or absence of services. Manuals on various conditions are complete, e.g., on orthopedic problems, dentofacial problems, and others. An attempt has been made in the general child care manual to include mental health considerations. It has been very successful, in my estimation. A more detailed manual has been contemplated on emotional problems of children, but thus far one committee has been unable to come to grips with the issues satisfactorily; another newly organized group is being fostered to take another try at it in the near future.

A new Mental Health Section of the Association has been authorized by the

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This report was submitted by Paul V. Lemkau, M.D., as a referee on the subject to the Committee on Research and Standards at the Eighty-Third Annual Meeting in Kansas City, Mo., on November 14, 1955. Dr. Lemkau is director of Mental Health Services, Community Mental Health Board, New York, N. Y.

Governing Council at this Annual Meeting. Programs arranged by a previously existing committee appear three times on the program. Previously, members of the Association with particular interest in mental health had no specific forum; most belonged to other sections, such as maternal and child health or public health nursing. Here they made their influence felt rather strongly as evidenced by the fact that for quite a few years mental health topics have appeared frequently in the programs of these sections and, also, particularly, the Section on Epidemiology. The new section will make it possible for public health workers in mental health, and it is a large number already and still growing, to have a forum of their own, and to make their influence in the Association more identifiable.

These events and others reflect the growing number of programs over the country, or at least the growing conviction that such programs should exist. In public health education, schools of public health have increased the educational opportunities for all students and an increasing number have developed specialty education for psychiatrists and nurses in public health-mental health. Some schools of nursing have also developed specialty courses to produce mental health nurse consultants. Presentations on the uses of personnel so trained have appeared on the programs of the Association frequently. One of the most recent and challenging aspects of this is the movement toward including the posthospitalized psychiatric patient and his family as a responsibility for health care by the generalized public health nurse.

A further area of advance has been the development of inservice teaching methods, particularly the mental health institute. This technic, initiated in public health by the Berkeley, Calif., Institute for Health Officers, supported by the Commonwealth Fund in 1949, has been widely used and has been the subject of some not too clearly formulated research studies. It has been used with a wide range of personnel and was developed into a preannual meeting institute of this Association in, I believe, 1951.

It would be unfair to assume that these many developments were the result of leadership alone; they are also a reflection of the tremendous and growing public knowledge and concern about the issues of mental health and mental diseases in the population. Judging from the solidity of organization and the enthusiasm shown at the annual meeting of the National Association for Mental Health at Indianapolis, it can be predicted that there will be a further burgeoning of public interest and indeed pressure for expansion of programming in this field.

## Standards

For the most part standards for clinical services to patients present no acute problems. The standards are reasonably clear for hospitals, though the rapid changes in therapeutic ideals and methods tend to make them passé almost before the ink is dry. Perhaps the most pressing issue at this time when some hospital systems are achieving a favorable balance between admissions and discharges for the first time, is the rehabilitation of the expatient so that he can become as productive a member of society as possible. This situation has something to do with the expansion of the role of the generalized public health nurse referred to earlier.

Standards for outpatient clinics are also reasonably clear. The clinic is a newer medical and social phenomenon than the psychiatric hospital and is still in active evolution; this makes standard setting a more difficult task. The problem is particularly acute as regards the administrative leadership of the clinic,

the struggle being between medical and nonmedical directorship. The larger problem of the place of the psychiatric outpatient clinic in the health services of the community remains largely unsettled. There are those who believe that the outpatient service is best a part of the tax-supported public health program, those who resist health department sponsorship, and those who insist that public clinics should be arms of public psychiatric hospitals. Some believe all clinics for children should be educationally sponsored. In both hospitals and clinics the maintenance of standards of training and experience in the face of very acute personnel shortages has posed continuous and trying problems, particularly in public relations. The public is inclined to feel that something is better than nothing and to urge the abandoning of personnel standards at times.

Standards for nonclinical services to the total population are practically nonexistent, so much so that it is useless to discuss them in as short a report as this one must be. There is no doubt that standard setting in this area is a challenge for this committee.

## Research

Basic research in psychiatry is largely responsible for the favorable balance between admissions and discharges from hospitals in some states as already mentioned. Such research bids fair to be greatly expanded in the next few years and to still further affect the operations of hospitals and clinics. It is likely that there will be significant financial support for psychiatric research contributed by the interested public in the next few years. Beyond the well known introduction of the new drugs, the present stage of a development that started with the ducking stool, and includes horse serum, camphor, metrazol, insulin, electroshock, carbon dioxide, and other similar empiric methods, the development of group psychotherapy appears to be the most significant recent advance.

Epidemiologic researches have brought to light new material of the greatest importance. Some degree of prevention of mental deficiency appears possible through increased knowledge of obstetrics, particularly the problems of eclampsia and prematurity, and in relation to nutrition of the pregnant woman. The findings of the pathogenetic effect of isolation of the human being in infancy, adulthood, and in the older years offer a lead for continued research in this area. The usefulness of various treatment methods in various social classes is also an issue for further research. The extension of morbidity reporting through the use of standardized reporting forms for all clinics will increase basic epidemiologic data hopefully to lead to new conclusions.

There is a beginning of administrative research as well. It is probable that increases in efficiency of hospitals can be attained by better administration and that measures of this increased efficiency can be developed, though the problem is even more difficult in psychiatry where "cure" is extremely difficult to define than it is in the general hospital. The different patterns of legal procedures are subject to research studies to determine which are responsible for the least accentuation of the illness involved. The location of clinics is also subject to evaluation in relation to effectiveness in patient relief, though this is not yet subject to standardized measurement methods.

There are almost innumerable other research problems that should be discussed. One I feel it imperative to mention—the description of "normal" patterns of living. This is an area of medical research, the establishment of the general "control," that cannot be done by the psychiatric profession; it is

geared to treatment primarily and sees sick patients rather than members of the population at large. The description and classification of the well is a peculiar responsibility of public health-mental health personnel for they have an opportunity here which is closed to the psychiatric profession except as a particular research venture.

It is, of course, impossible to give more than an extremely rough over-all view of a field which includes half the hospital beds and which is involved with at least half of all patients who come complaining to physicians. Add to this the mental health judgments that concern the total population and you have an enormous task for public health planning, standard setting, and research. It cannot be avoided. The establishment of the new section indicates a willingness on the part of the Association to face it more squarely than has been the case in the past.

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## Another Honor for Dr. Walter Reed

The school component of the Walter Reed Army Medical Center, since 1950 known as the "Army Medical Service Graduate School," has recently been re-named the "Walter Reed Army Institute of Research." Without changing the mission of this institution, the new name is designed to pay "further honor to the famed conqueror of yellow fever. . . . It will continue to provide medical research and professional graduate training required by the U. S. Army to fulfill its role in the national defense."

The newly named institute, located in Washington, D. C., is an outgrowth of the first school of preventive medicine in the United States, the Army Medical School, of which Dr. Reed was the first faculty secretary. It was founded in 1893, in 1923 joined with the Army's dental and veterinarian schools to form the "Medical Department Professional Service Schools," and later the same year with Walter Reed Hospital to form the present Army Medical Center.

A COMMITTEE REPORT

# Trends in Public Health Dentistry

Dental Health Section

This committee was asked to "study trends in our special field and write general predictions as to where we are going." This very fact suggests that dental public health is approaching maturation. That impression is strengthened by reading the various Supreme Court decisions on water fluoridation. These decisions speak of dental disease as "a proper subject, in relation to public health, for a municipal corporation to act upon in the exercise of police power," and "its seriousness as affecting the health and well-being of the community."

There are other signs as well. A brief comparison of certain published reports, say for 1946 and 1954, shows that in these years eight state or territorial departments of health have added dental sections and none have discontinued dental programs. As of 1954, only two of the 54 state departments failed to include dentistry as a permanent part of their program. The annual budgets for dentistry in these departments of health reflect almost a 100 per cent increase during eight years, bringing the present total to more than two million dollars.

Finally, it is significant that dental services are concomitant to the extension of full-time public health units into local areas. These eight years show a 66 per cent increase in the number of public health dentists who work full time at county, city, or district levels.

The dental public health program from its inception has made dental health education its most important function. While believing that dental care should be available to everyone without restriction, dental public health has felt that procuring care is an individual responsibility and that only indigent children are public charges. Undoubtedly, this concept will continue. The public health job is to educate, motivate, and promote.

Prevention has been the dominant theme. Over the past decades research and practice in dental public health have been concentrated upon the major problem—dental caries, and particularly dental caries in children. Some measure of control has been attempted in such conditions as oral cancer or cleft palate where responsibility is clearly divided between dentistry, medicine, and social work. Such problems as faulty occlusion and the periodontal diseases, which are wholly inside the province of dentistry, are largely undefined and unexplored. A major degree of control of dental caries has now become practicable through the fluoridation of public water supplies. This program is now the major promotional effort.

Since the procurement of dental care is an individual responsibility, the

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This report of the Committee on Trends in Public Health Dentistry was presented at the Eighty-Third Annual Meeting of the American Public Health Association in Kansas City, Mo., November 18, 1955.

number and distribution of practicing dentists and their knowledge and concern about public health dentistry are of prime importance. Rather definite trends appear to be developing with regard to the public health preparation of these dentists. For the undergraduate student the dental schools are adjusting their curricula for effective orientation of the student to general and dental public health and preventive dentistry. Greater consideration is being given to developing in the student a broad social consciousness and sense of community responsibility. Also, an effort is made to give the student a better understanding of his potential contribution to the prevention of dental disease and the promotion of optimum dental health.

The definition and scope of preventive dentistry, while subject to varying interpretation by different schools, tend to broaden and to encompass areas of protective and rehabilitation services beyond the literal and traditional meaning of prevention. Also, the student is gaining an increased appreciation of public health methods and the application of scientific research technics to field investigations.

With regard to dental hygiene, remarkable progress has been made in recent years. Dental hygiene has achieved professional status and the undergraduate schools have been elevated to a true university level. Within the last few years, the number of dental hygiene schools has increased from 16 to 31, with an accompanying increase of from 400 to 800 in the annual number of graduates.

A paradox exists at the graduate level. Although the opportunities for dentists in public health are steadily expanding, both quantitatively and qualitatively, the number of persons entering the field, as measured by the number of dentists enrolled in schools of public health, appears to be remaining static or even decreasing. Dental hygienists with graduate training are even less available. There is a trend toward establishing dental hygiene at the level of the first two years of college, with academic credit toward a bachelor's degree. Thus graduates, if they wish, can continue their preparation in the fields of public health, school health, or health education.

These trends indicate that dental public health can move into adulthood as a vigorous and lusty member of the community, indeed. It need have no fears about keeping a steady job or of being a respected member of the community. It has a worth-while contribution to make to the life of its times. It can do this, but there is nothing automatic or inevitable about it.

Fluoridation for example. In general the progress of water fluoridation is encouraging and the opposition is becoming an ever smaller minority. But who can doubt the existence of a vast group of people whose indifference indicates a disbelief in the values of good dental health? Certainly, well established water fluoridation programs have been discontinued. Dental public health is indicted here, as it is in the microscopic number of topical fluoride programs that are now in existence. After all, prevention has been our shibboleth for years.

On the positive side, the beneficial effects of fluoridation are cumulative, since each new crop of children get the maximum benefits. As these benefits become pronounced an increasing fraction of the effort now expended on dental caries in children may be redirected toward other oral diseases of public health importance as they occur in persons of all ages.

Dental research over the past few years has shown an increasing concern with the periodontal diseases. These diseases, unquestionably a major cause of tooth loss in middle and later life, have long been studied by clinicians

and are amenable to treatment if detected before tissue destruction has become extreme. The new concern has been with prevalence and relative risk—the epidemiology—and the evolution of survey methods which will permit the comparison of different populations, studied with different examiners. This is the discipline which uncovered the caries-fluorine relationship. Already differences in risk between and within populations are being observed. When these differences are related to specific causative factors mass preventive methods may be indicated.

The trend toward multidisciplinary approaches to the control of chronic illness, such as oral cancer, cleft palate, and cerebral palsy will certainly grow and expand—hopefully—with dental public health in the front line. The schools of public health are placing increased emphasis upon the team effort in public health practice. Involved in such effort are the physician, dentist, nurse, engineer, medical social worker, and others working together toward a common goal. Also, some schools are devoting greater attention to the application of general public health principles to the subspecialties of public health, including dentistry. This kind of curriculum considers the broad field of public health as a profession in itself.

In a few instances dentists are functioning as generalists in the field of public health—as assistant health officers, or as chiefs of other divisions. It is gratifying to have the dentist's competence in broader fields of public health administration so recognized. However, it may imply that the dental program is neither broad enough nor important enough for full-time operation. A good case can be made for a program specialist "sticking to his last." Dental public health will probably face such problems increasingly in the future.

Dental manpower must occupy a larger place in the dental public health orbit. Enrollment in graduate schools suggests the need for a much more dynamic and effective effort to recruit dentists for careers in public health. The field training phase of this education needs serious attention. Field training programs for physicians have been established and accredited in many states. Nurses and engineers are making commendable progress in the development of similar opportunities. This is not the case in dentistry at the present time. The team concept of public health demands that all categories of personnel be brought together for training experiences. Possibly training programs available for physicians may provide similar educational experiences for dentists, as well as for other types of public health personnel. However, problems of recruitment and financing must be met to insure adequate facilities for supervised practical experience.

All that has been said about the recruitment of dentists for public health can be repeated, with emphasis, for the dental hygienist. Dental hygienists are not plentiful, even as clinicians. Very few hygienists have professional public health training. Some attention is being given to the additional educational needs of dental hygiene graduates who wish to prepare themselves for careers in public health. The functions of the public health dental hygienist are being more clearly defined. Certainly, their importance to dental public health will require attention to causes which are now being identified as blocks to recruitment.

Even more important in the dental manpower picture is the practicing dentist. Hopefully, the present trends in the dental curriculum will produce graduates with a better appreciation of the private practitioner's role in the public health movement and of his responsibility to his private patients for the prevention and control of dental

diseases. To guarantee this dental public health must help in every way it can.

The public health dentist has a terrific stake here. He is, or ought to be, concerned that every man, woman, and child within his jurisdiction gets all the dental care needed, when it is needed; and that this dental care be of high quality. Anything less than this would refute the belief that dentistry is an essential health service.

Since the practicing dentist is the purveyor of this service, his numbers, locations, skills, and practice habits are of fundamental importance. Curiously, dental public health has not considered the dental school as a vital part of its "beat." The average dentist's degree work is likely to be his terminal education. His practice methods are founded there. In broadening the dentist student's social horizon, dental public health must take a more active part than it does now. For example, the increased output, both in quantity and quality, made possible by multiple chair practice and the systematic use of chair-side assistants is well documented. Yet little has been done to equip dentists with these technics, particularly in the dental schools where the training would be most effective.

Then too, in a few instances dental students routinely get some of their clinical preparation in health centers or other public clinics. Students like this plan but it is not available in many places. Dental public health could extend this service, particularly into rural areas.

Also, in universities great resources such as sociology, psychology, education, and economics, to name but a few, contribute to the dynamics of dental public health. Many cloistered dental students never rub elbows with these resources.

About one in ten dental graduates apply for a hospital internship or residency. The ratio will be higher when more real opportunities are available. Dental public health surely will need to explore these possibilities as training grounds for team concepts and community needs.

Finally, the public health dentist must become familiar with prepayment and postpayment plans. The growth of such plans is inevitable. Dental public health's role might be called "third person dentistry." This requires knowing the ins and outs of such plans, and being aware of the groups seeking the service. Most of all it requires an understanding of what the practicing dentists can and will do toward providing the dental care in such plans. The public health dentist must act as go-between, to see that the two groups meet and that an equitable plan for both is worked out.

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A COMMITTEE REPORT

# Hospital Solid Wastes and Their Handling

## Committee on Hospital Facilities

### Engineering and Sanitation Section

There has been a steady development in recent years toward bringing together many medical, hospital care, and public health programs into integrated community and state plans for health conservation. One example of this closer relationship between these previously separate activities relating to the public health is a trend for state public health agencies to participate in the review of plans for state and local hospital facilities under the provisions of state hospital licensure laws.

The Engineering and Sanitation Section of the American Public Health Association recognized this growing responsibility of public health agencies in hospital planning and construction by the formation in 1952 of a Hospital Facilities Committee. The committee has interpreted as its charge a study of those several areas of environmental concern having public health implications and which are common to hospitals and related institutions.

The committee, composed of members associated with private and state-supported hospitals, state hospital agencies, and the federal government, was particularly impressed after an initial review of the total hospital environmental picture with the significant role in a hospital's daily operations of solid wastes collection systems and waste disposal activities. Because of the meager information available on this general subject, a survey and study of hospital solid wastes was selected as the committee's first undertaking. It was the group's decision to exclude solid radioactive wastes from this report because of their special character.

Personnel from the Hospital Services Division, Georgia State Department of Health, initially developed material used by the committee. The American Hospital Association's Council on Hospital Planning and Plant Operation and the Public Health Service Division of Hospitals gave generously of their resources in helping secure some of the hospital waste surveys which form an essential part of this report. The committee sincerely appreciates the efforts of these groups and those hospitals and their staff members who prepared the surveys.

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## I. Summary of Recommendations and Conclusions

1. Consideration of waste handling and disposal problems during the earliest stages of a hospital's design and

This report of the committee was presented at the Eighty-Third Annual Meeting of the American Public Health Association in Kansas City, Mo., November 18, 1955.

planning is the key to their successful resolution.

2. Based on the experience of 29 hospitals the weights and volumes of combustible wastes on a per patient basis approximately double; whereas the production of garbage and noncombustible wastes decreases in nearly the same proportion between hospitals having 100 and 500 patients, respectively.

3. A total average waste production of approximately 9 pounds per patient per day, decreasing to approximately 6½ pounds per patient per day may be expected for hospitals having a range of 100–500 patients, respectively.

4. Hospital waste-handling and disposal systems should be designed and operated in such a manner as will insure complete freedom from sanitary hazards.

5. Recommended specific sanitary objectives of hospital waste-handling systems should include the increased use of disposable can liners, routine cleaning of all waste containers, mechanization of waste container washing facilities, and minimization of waste transfer operations.

6. Where hog feeding is utilized as the method of garbage disposal, hospitals should require that garbage cooking be practiced.

## II. Introduction and Objectives

### A. Public Health Implications in Hospital Wastes Handling

A clean environment remains the first requirement for controlling and preventing the spread of disease, and the careful, sanitary collection and disposal of a hospital's solid waste products constitutes an important means toward this end.

The hospital patient's vulnerability, due to his frequently weakened resistance to disease, justifies a rigorous planning of the hospital's waste-handling procedures. Further, because hospital staff members may be directly exposed to gross quantities of waste-borne contaminants, it follows that the hospital must always be on guard through strict and continuous supervision of even the best organized waste-handling program.

A no less important reason for the well managed waste-handling system is to avoid the ever-present possibilities for insect and rodent attraction and breeding. Further, offensive odors and unsightly conditions, due to improper waste container cleaning or storage practices, can result in a damaging patient, staff, and even community reaction.

In the normal course of hospital activity, solid waste products are handled by a variety of hospital personnel ranging from the highly trained professional to the unskilled worker. Therefore, it becomes important that there is complete confidence in and a clear understanding of those basic sanitary principles and precautions applicable to waste handling by all members of the hospital staff. A restatement of those sanitary principles applicable to hospital wastes collection systems and disposal methods is one of the objectives of this study.

### B. Planning for Handling Hospital Wastes

A successful solid wastes-handling system, from an economic and administrative point of view, is largely predetermined by those decisions reached during the hospital's preliminary design and planning period. Chief decisions to be made during this critical early stage revolve around:

1. Estimates of total expected solid wastes production.

2. Selection of methods and sizing of equipment for ultimate disposal of wastes.

3. Assignment of adequate space and planning all physical features needed for the intended waste-handling activities.

4. Determination of size, type, and locations of original waste containers, transfer recepta-

cles, if required, and transportation equipment.

Very few decisions regarding waste handling can be deferred for a later stage without risk of finding serious "built-in" restrictions. It is during this phase that the use of readily available basic data and other aids in planning is an immediate necessity. Since there is a general lack of such assembled information, one of the report's main objectives is to study the total production and relative amounts of the several components of hospital wastes.

## III. Definitions

### A. Wastes

The useless, unused, unwanted, or discarded materials resulting from normal hospital activities. Wastes may include solids, liquids, or gases.

### B. Refuse

All putrescible and nonputrescible solid wastes, including garbage, rubbish, ashes, and biological wastes (as hereinafter defined).

### C. Garbage

The putrescible animal and vegetable wastes resulting from the handling, preparation, and consumption of foods.

### D. Rubbish

Rubbish is all nonputrescible solid wastes, except ashes. Rubbish consists of both combustible and noncombustible materials, such as paper, tin cans, glass bottles, bedding, rags, crockery, metals, and similar materials.

### E. Biological Wastes

Biological wastes are those wastes resulting directly from patient care activities, such as diagnostic procedures and treatment and include materials of medical, surgical, autopsy, and laboratory origin.

1. Medical Wastes include gauze dressings and bandages, swabs, cartons, and plaster casts. They are usually produced in examination and treatment rooms and in patient nursing areas. However, the operating rooms also contribute to this category of waste materials. Sputum cups and paper bags containing paper tissues soaked with secretions of the nose or throat from tuberculosis and other infectious disease cases also fall under this heading.

2. Surgical and Autopsy Wastes include amputated limbs, tissues and organs, placenta, and similar types of material.

### F. Collection System

A waste collection system is a system embracing the administrative and procedural technics and equipment used in the collection, transfer, and transport of wastes.

### G. Disposal Method

A disposal method is the ultimate means of rendering wastes inoffensive from a public health and public nuisance standpoint.

## IV. Description of Hospital Wastes Survey

A number of initial inquiries made by the committee produced little correlated information on (1) the total amounts of solid wastes produced by hospitals; (2) how wastes are handled within the hospitals' internal organization; or (3) how they are ultimately disposed of. Therefore, a questionnaire was designed to secure certain limited information, spanning a one-week waste collection period to eliminate any abnormal day-to-day fluctuations.

Information requested included the weights or volumes of wastes produced, the identity of the main sources of the wastes; the sizes and types of containers originally receiving the wastes; special waste-handling practices and container cleaning methods; transfer containers used; means for transporting wastes;

and methods employed for the ultimate disposal of these wastes.

One-week waste surveys were returned from 29 general hospitals with an average daily patient census ranging from 39 to 640. The average number of personnel on duty over a period of 24 hours ranged from 58 to 1,800. Geographically, the largest number of hospitals reporting were located in Georgia and Minnesota. However, hospitals from 12 other states are included among the group. Of the 29 hospitals, 16 are private, local, or state-supported, and 13 are federally operated.

The surveys were conducted during the latter part of the summer of 1955.

## V. Wastes Production

### A. Types

Hospitals participating in the survey were requested to report their wastes collected as: (1) garbage; (2) paper, boxes, and other combustibles; (3) treatment room (medical) wastes; (4) surgical wastes; (5) autopsy wastes; and (6) noncombustibles, such as cans and bottles; and (7) other wastes.

In several instances treatment room wastes were reported in the total of paper and other combustibles. Accordingly, it was decided that the totals for treatment room wastes should be added to and counted in the total reported combustibles. Only three hospitals reported rags as a separate waste item. All others listed rags combined with their combustible wastes or made no specific mention. From this it is concluded that rags are insufficiently important to be considered as a separate category of hospital wastes. In no instances were ashes reported in the waste totals. This apparently indicates that coal-fired water or steam heating equipment was either not in operation or is not used among the 29 hospitals surveyed. No data on the questionnaire item "other" (wastes) were reported.

**Table 1—Daily Average Production of Hospital Wastes (Computed from Weekly Waste Production Data)**

| Waste Type | Average Weight per Capita * | Average Volume per Capita * | Average Weight per Patient † | Average Volume per Patient † |
|---|---|---|---|---|
| | (lbs/day) | (cu ft/day) | (lbs/day) | (cu ft/day) |
| Garbage (sp. wt: 53 lbs/ft $^3$) | 1.86 (8) ‡ | 0.035 (15) | 3.28 (8) | 0.064 (15) |
| Noncombustibles (sp. wt: 9.24 lbs/ft $^3$) | 0.83 (5) | 0.090 (17) | 1.10 (5) | 0.111 (17) |
| Combustibles (sp. wt: 4.85 lbs/ft $^3$) | 1.67 (5) | 0.344 (21) | 2.61 (5) | 0.521 (21) |
| Surgical | | | 0.11 | |
| Autopsy | | | 0.03 | |
| Total | 4.36 ** | 0.469 ** | 7.13 | 0.696 ** |

* Average equivalent—population (per capita basis) of 29 hospitals sampled is 393.
† Average number of patients of 29 hospitals sampled is 224.
‡ Bracket indicates number of hospitals included in average.
** Surgical and autopsy wastes omitted.

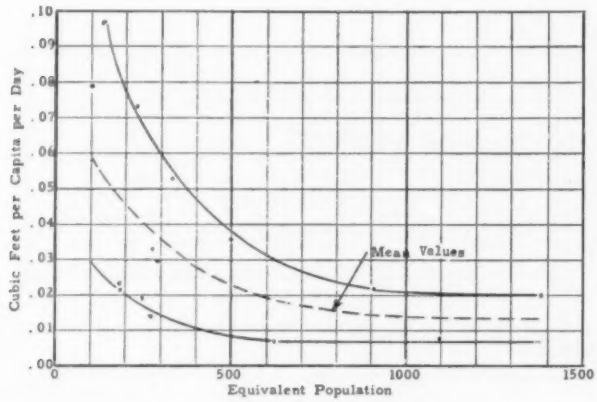


**Figure 1—Hospital Garbage Production on Volume per Capita Basis**

### B. Specific Weights

Waste collection data were reported by two-thirds of the group on a volume basis; the balance presented data by weight. One hospital recorded its production by volume, together with partial weight data, enabling a single direct determination of specific weights of wastes. The specific weights of the several categories of wastes (Table 1) were, therefore, determined indirectly by the division of the unit weights per capita for each waste category by their respective unit volumes per capita. For purposes of comparison with the computed unit weight of hospital garbage of 53.1 lbs/ft,[3] other typical values of 30–57 [1, 2] lbs/ft [3] are noted in the literature for municipal garbage. The survey's computed specific weights of combustibles and noncombustibles are 4.85 lbs/ft [3] and 9.24 lbs/ft,[3] respectively.

Insufficient data were available to determine specific weights of surgical and autopsy wastes. Assuming they have a specific gravity of one, their relative unimportance (less than 2 per cent by weight) can be demonstrated from their volume data.

### C. Unit Weights and Volumes Produced

References on the total average production of hospital wastes range between 7 and 8½ lbs per patient per day.[3-5] One reference [4] to an average garbage production of 4 lbs per patient per day was noted.

The survey data, due to the limited sample, cannot be construed as being more than indicative. Figures 1, 2, and 3 for volume production of garbage, noncombustibles, and combustibles, respectively, were constructed on an "equivalent population" * or "per

* While the use of the "patient" as the denominator of waste production is most direct, it can be subject to considerable error in interpretation. A better correlation is secured using an assumed "equivalent population," computed from the total of patients, plus staff members in full-time residence, plus the balance of the total number of employees times an assumed factor. A proposed factor is 5/21. This is derived by considering the length of the average hospital employee's work week. The factor is based on the percentage of hours of this work week to the total hours in a 7-day week, i.e., $40/7 \times 24 = 5/21$. Still another approach may be based on the number of meals taken on the premises by such employees. Assuming this is one each day, it would mean a factor of $1/3 \times 5/7$ or 5/21, on a weekly basis.

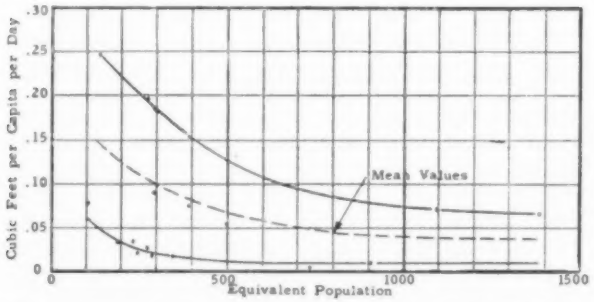


**Figure 2—Hospital Noncombustible Wastes Production on Volume per Capita Basis**

capita" basis. Because of the wide variation for each type of waste produced between individual hospitals of the same size, bands, including 85 per cent or better of all data reported are shown. Dotted line curves, approximating the mean values of each band, have also been drawn. These curves demonstrate interesting trends in the production of each of these wastes as the size of the hospital varies.

The data collected indicate that garbage and noncombustibles production on a per capita (or patient) basis decrease and tend to level off with hospitals of increased size. The reverse condition is indicated for combustibles, excepting that insufficient data for the larger hospitals do not firmly indicate the rate of this increase. Various reasons relating to hospital administration, staffing patterns, etc., can be ascribed to these trends.

Figure 4 was constructed utilizing the mean values obtained in Figures 1, 2, and 3, together with equivalent population-patient ratios.* Here it can be

* A constantly increasing "equivalent population" (Y) to "patient" (X) ratio, determined from the survey data to be $Y = 1.58 + 0.0005X$, represents one hazard of applying the average waste production figures per patient which are listed in the attached table. For example, from the survey data, the "equivalent population" to "patient" ratio for a hospital having an average patient census of 100 is 1.63; whereas for a 500 average patient census hospital it is 1.83.

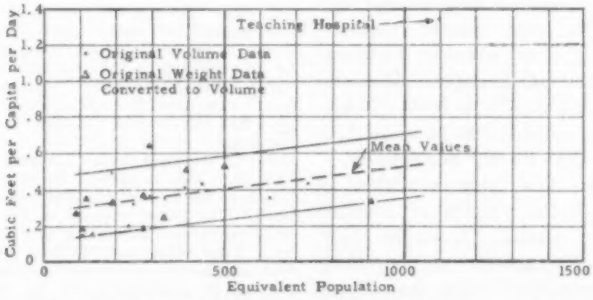


**Figure 3—Hospital Combustible Wastes Production on Volume per Capita per Day Basis**

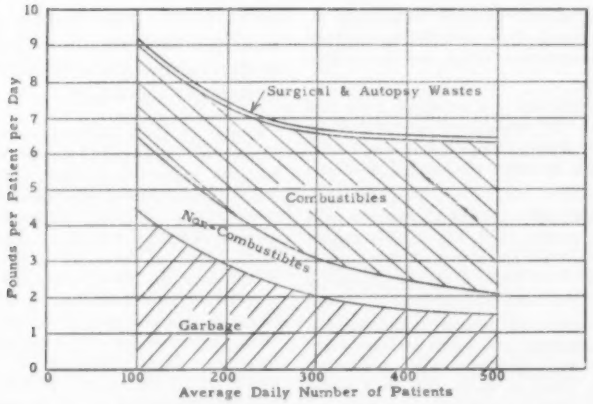


**Figure 4—Combined Mean Daily Production of Hospital Solid Wastes on Weight per Patient Basis**

seen that the 7 to 8½ lbs per patient per day ratios are particularly valid for those hospitals having a patient census from approximately 250–125. In the larger hospitals, these averages fall above the amounts noted and tend to become more conservative when used for waste estimating purposes. In special situations, such as a teaching hospital (see Figure 3), even these values can be considerably exceeded.

While these data do not demonstrate daily differences in waste production, Figure 4 illustrates potential pitfalls in closely adhering to average production figures and projecting them for either much larger or smaller hospitals than the average for the survey. Further, the actual production figures for each of the three components of hospital wastes may depart a substantial amount for an individual hospital, as shown by Figures 1, 2, and 3.

## VI. Storage and Collection Systems

One prerequisite for a hospital's waste-handling system is that it must be economical to operate. Parallel requirements having environmental importance include:

1. The system must present minimum opportunities for patient and staff contamination—either by contact or air-borne routes, or through vectors.

2. Containers and other equipment must be selected for their cleanability and ease in handling with a minimum of employee effort and noise.

3. Collection schedules must be arranged to provide a minimum of disturbance to other hospital routines and with a frequency which will minimize odor production.

### A. Functions and Types of Containers

Perhaps more than any other single factor contributing to the success of a solid wastes collection system is the proper selection of solid wastes containers. For convenience, containers may be classified in at least two functional groupings:

1. Containers for receiving wastes where they are first produced.

2. Intermediate storage or transfer containers employed for concentrating and occasionally transporting wastes to points of ultimate disposal.

Containers performing functions of the first group include:

Metal receptacles with or without foot pedal-operated covers are used in such areas as medical examination and nursing utility

rooms. Their design normally includes a removable inner pail of galvanized iron or stainless steel construction which can be readily cleaned.

Bed pans, urinals, and commode pans and pails perform the specialized function of receiving and transporting liquid and solid patient excreta to water closets and flush rim hopper sinks.

Sponge receptacles consist of pans or pails mounted on casters and fitted with rubber bumpers. An open receptacle of this type is generally used in such areas as operating rooms, delivery rooms, and emergency rooms.

Kick buckets are usually similar, but deeper than sponge receptacles and are fitted with casters and bumpers. They are found in the same areas as those described under sponge receptacles.

Receptacles with or without self-closing lids and a removable metal pail or canvas bag liner are usually provided for waste paper, paper towels, paper containers and similar materials in toilet areas, refreshment stands, and near water coolers.

Sand urns are used in a policing function for cigarettes and cigars when located at strategic points throughout the hospital. They may be floor standing or wall-mounted. Some wall-mounted urns are provided with "orange-peel" covers and require no sand.

Open receptacles of metal or fiberboard construction are employed in such areas as bedrooms, nurses' station, administrative offices, and other areas for the initial collection of combustible and noncombustible wastes.

Sputum cups—Both disposable paper and nondisposable sputum cups are found in use. These find application in isolation areas for certain types of patients, such as those with tuberculosis.

Paper and plastic liners and bags have come into widespread use, primarily as liners for other permanent-type receptacles to facilitate emptying and cleaning but also for direct clamping or pinning to the patient's bed. Specially designed racks and hangars are becoming available for supporting these bags and opening and closing them by pedal operation.

Galvanized iron (GI) cans in a large range of sizes find general use in most hospitals. These range in size up to 33 gallons and have the especially important sanitary feature of a tight-fitting lid.

The second category of containers, used for the intermediate storage or transfer function for concentrating wastes, in addition to the GI cans above, include the following:

Canvas or fiberboard box or laundry trucks consist of lightweight canvas or fiberboard hampers supported on light frames and casters. They are used principally for collecting wastes from office-type areas and generally have a 12-bushel capacity. Another version of this type of container is the canvas bag mounted on the maid or housekeeping carts.

Metal or cardboard drums, usually in the 55-gallon size and with or without covers, are often employed for an intermediate storage function. Their materials of construction and/or size limit entirely prevent their being effectively cleaned.

Welded steel, truck-transported bins, which range in size from 1½ to 10 cu yds and require specially designed trucks for pickup and deposit at storage points; the bottoms of these bins are generally hinged and designed to quickly discharge their contents. A variety of side and top opening hinged covers are available.

### B. Survey Results

Answers to what types of waste containers are found in most common use; how they are transported and cleaned; and what waste transfer operations take place will, in effect, describe hospital wastes handling systems. The results of the survey were analyzed in this section of the report to develop a composite picture of such information for each category of wastes found in hospitals. The numerous individual solutions noted in the storage and collection of hospital wastes are both a reflection of the complexity of the hospital wastes picture and an expression of the ingenuity of hospital personnel in meeting their day-to-day problems.

1. Garbage—The 32- or 33-gallon GI can is the most popular container used for the initial collection of garbage from main kitchens. Floor and diet kitchens most generally use the 5-gallon GI can. Limited transferring of garbage from 32-gallon cans to succeeding containers takes place prior to ultimate disposal.

Forty per cent of the hospitals hold garbage under refrigeration prior to removing it for disposal. Concessionaire and municipal trucks are utilized in over 75 per cent of the hospitals surveyed for hauling garbage from the hospital site.

Only two hospitals report the use of disposable plastic or paper liners for their garbage cans. Can cleaning is accomplished by steam or hot water hand hosing in approximately twice as many hospitals as those using some form of manual washing.

2. Combustibles — Painted metal wastebaskets in the 3- to 5-gallon range are used in the majority of patients' bedrooms and offices. In one-third the hospitals reporting, galvanized metal or fiberboard containers were listed for bedroom use. Approximately one-third the hospitals line their patients' wastebaskets with paper or plastic bags or newspapers.

No correlation could be established for the preferred size of containers used for combustible wastes from medical examination and treatment rooms. At these locations the sizes recorded ranged from 4 to 32 gallons. Galvanized metal cans predominated, followed in turn by stainless steel receptacles.

Wastes from patients' bedrooms, offices, and treatment room receptacles were most generally transferred to 32-gallon GI cans. Canvas bags and canvas box trucks were used in less than 10 per cent of these transfer operations.

In four of the 29 hospitals refuse chutes were used for conveying wastes originating from patients' rooms and offices. Only one hospital mixed these wastes with medical examination and treatment room wastes in its refuse chute.

Eighty per cent of the hospitals hauled their own combustible wastes to points of ultimate disposal; the remainder of the group relied on municipal or contract hauling facilities. Three members of the group listed hauling systems using welded-steel, truck-transported bins.

Approximately 75 per cent of the hospitals reported that painted metal wastebaskets were washed. The frequency of this washing, however, was not recorded, except in two cases, which reported washing wastebaskets once a week. Galvanized and stainless steel containers were cleaned almost entirely by steam hosing.

3. Noncombustibles—It is a general practice to keep separate combustible and noncombustible wastes. The largest variety of original waste containers was noted for the group of noncombustible materials. While the 32-gallon GI can predominated, smaller GI cans, wood barrels, cardboard cartons and cardboard, fiber and metal drums up to 55 gallons in size are also used. Relatively few succeeding transfer operations were reported for noncombustibles, excepting three hospitals reporting transfer to the welded-steel, truck-transported bins. The survey indicated that hospitals, municipalities, and private trucking contractors shared almost equally in hauling these wastes to disposal points. Steam cleaning again was the favored method for cleaning this group of waste containers.

4. Surgical and Autopsy Wastes—Both by weight and volume, wastes from these two sources average less than 2 per cent of the hospital's total. Due to their possibly contaminated character, operating and autopsy room personnel frequently carry these wastes directly to their points of ultimate disposal.

GI or stainless steel containers, usually no larger than 10 gallons in size, are most frequently employed for operating room combustible materials and gross tissues. Paper liners for these cans are occasionally but not generally found. Particular attention is paid, it was noted, to washing these cans. Washing with detergents, followed by rinsing, is

their most common method of cleaning. Less often hot water hosing or dipping or steaming are practiced.

Cloth or newspaper wrappings are used in the handling of amputated limbs. Small glass jars are generally used for operating room tissue specimens sent to the pathology laboratories. Cardboard cartons are sometimes employed for both limbs and gross tissues. There seemed to be no distinctive differences between those practices for handling operating room and autopsy waste materials.

## VII. Disposal Methods

### A. Types of Wastes

1. Garbage — Hog feeding ranked first in importance with 14 out of 29 hospitals reporting this method of garbage disposal. Eight hospitals reported incineration and nine listed grinding with disposal to sewer. Two indicated that supervised sanitary landfills were being used for this purpose. The smaller number of hospitals shown than the total of methods reported above is explained by there being, in several instances, dual disposal methods. These usually involve grinding combined with either incineration or hog feeding. Evidence of an increasing popularity for grinding wastes from serving or diet kitchens was noted. Because of the somewhat disproportionate number of hospitals reporting from smaller population centers, it is felt no conclusions should be drawn regarding hog feeding being the predominant disposal system in use.

2. Combustibles—In all but four cases, hospital or municipal incinerating facilities are employed for paper, boxes, and other combustibles from patients' rooms, offices, and related contributing areas. Sanitary landfills are used in these four exceptions. Wastes resulting from medical treatment activities are invariably incinerated.

3. Noncombustibles—Sanitary landfills or open, unsupervised dumps are the only ultimate means of disposal reported for this group of wastes. No distinction is drawn between them since a review of the instructions furnished for preparing the survey forms makes doubtful whether the significant differences between sanitary landfill and unsupervised dumping operations were completely understood. No instances of can salvaging or baling operations were noted.

4. Surgical and Autopsy Wastes—Incineration predominates for the disposal of limbs and tissues resulting from surgical procedures and autopsied materials. Proper burial or cremation of limbs is listed in six of the 29 reported cases. Pathology laboratories receive considerable amounts of tissue materials for examination and these, when examined, are in turn incinerated. One hospital reported autopsied materials were disposed by grinding.

### B. Incinerator Design Capacities

Reported incinerator capacities, taken without regard to incinerator design ratios between wet and dry materials, ranged, on an actual use basis, from 1.05 to 3.9 lbs per patient per hour. The median incinerator design rating of a group of 11 hospitals reporting was 2.08 lbs per patient. Capacities on a lbs per bed basis would be smaller since they would reflect the average rate of bed occupancy. Four of the hospitals listed incinerator design specifications ranging between $\frac{1}{3}$ "wet" and $\frac{2}{3}$ "dry" by weight to $\frac{2}{3}$ "wet" and $\frac{1}{3}$ "dry."

## VIII. Sanitary Considerations in Wastes Handling

### A. Survey of Protective Clothing

All but four of 29 hospitals polled on special precautions for handling wastes reported some form of personnel protective clothing. There was, however,

little uniformity between them. Protective features varied from gloves alone to gowns, caps, face masks and gloves used together.

Gloves and aprons in combination were most frequently listed for routine wastes handling. Infectious materials and tuberculosis wastes in particular, are usually handled with gowns and masks. From the information submitted, it could not be verified that gloves are generally used along with gowns and masks for infectious wastes handling.

It is of interest to note that in two of the four hospitals not listing any form of personnel protective equipment, either paper cartons or paper can liners for medical waste containers are noted.

### B. Other Sanitary Precautions

It is apparent from the questionnaires returned that the hospitals, generally, are making genuine efforts to control the contact and air-borne routes of possible infection from their waste-handling activities. One example of their recognition of the air or surface contamination possibilities resulting from dust or spilled waste materials is the scheduling of all waste collections to avoid patient feeding periods.

The committee believes that protective clothing; thorough cleaning of waste containers following emptying; and the use of disposable can liners offer, when used together, maximum protection against contact-caused infections. It further believes that by bagging presumably contaminated wastes, the required protective clothing and safety procedures may be markedly reduced. Another predictable by-product of using these combined procedures is that they would make less necessary the utilization of nursing personnel, trained in isolation and gowning technics, for infectious wastes disposal activities.

The principles of cleaning all waste containers following use, using disposable can liners or the simultaneous application of both are practices within the reach of today's hospital and are strongly commended by the committee.

Waste containers should be selected with a view to their surface cleanability, the absence of cracks and crevices difficult to clean and a strong rugged construction.

Last, the strategic location of adequate can washing facilities and the utilization of fully mechanized can washing equipment are labor saving aids which encourage the routine and uniform washing of containers and follow as desirable hospital design features.

The careful observance of these few elementary sanitary precepts will, it is felt, provide real insurance and assurance on the safety of hospital waste-handling procedures to patients and staff alike.

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# Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

## Child Safety Education Project

Early in 1954 a child safety project was undertaken in New Jersey under the joint sponsorship of the State Department of Health, Congress of Parents and Teachers, Safety Council, the state chapter of the American Academy of Pediatrics, and the National Safety Council. The project history and experience have now been detailed in a brochure "The New Jersey Child Safety Project," published by the State Health Department.

The project consisted of an intensive preparatory educational campaign followed by a questionnaire distributed to a 10 per cent sample of PTA membership of the state, about 30,000 persons. The questions were of the multiple choice type dealing with common situations in the home that contain an accident hazard to small children. The questionnaires were filled out by visits of specially appointed members in each local unit to the members selected at random for the sample. Tabulation was done by the National Safety Council.

The "New Jersey Parent-Teacher" discussed the questionnaire, the correct answers and reasons for the choice. The questions and answers were also offered to newspapers throughout the state as a weekly quiz.

An evaluation questionnaire sent later to safety chairmen of PTAs indicated that the project resulted in greater interest in safety and in the stimulation of new safety activities.

The State Health Department's director of maternal and child health, Renee Zindwer, M.D., was the mind in which "the project had its beginning." It might well serve as a suggestive guide to intensified safety activities in other communities.

New Jersey State Health Department, Trenton 7.

## Current Research in Health

The Health Information Foundation has recently published its fourth annual edition of "An Inventory of Social and Economic Research in Health." Following the classification of earlier years, 398 projects currently being carried on by nearly 250 agencies in seven broad areas of research are listed: Studies investigating health levels of specific areas or groups; studies related to mental health; to health facilities; to health services; studies investigating sociological factors and economic factors in the field of health; and investigations relating to personnel in the health field. A five-part, cross-referenced index of these investigations covers subject, sponsor, project personnel, research organization, and geographical location of the research organization headquarters.

In the first edition in 1952 a 70 per cent return from 774 organizations resulted in a listing of 296 studies. For the current 1955 edition, 830 agencies were queried; 57 per cent replied and 227 agencies were carrying on the 398 projects.

Health Information Foundation, 420 Lexington Ave., New York 17. No information as to price.

## Jaycee Community Health Week Kit

A streamlined kit is spurring the second Community Health Week, March

18–25, 1956, sponsored by the U. S. Junior Chamber of Commerce in cooperation with the National Health Council. "Let's Do More About Health in Our Town" is the theme. The kit, prepared largely by an NHC committee of its member organization representatives, suggests where to look for local health needs and how to meet them.

Aim of Community Health Week, initiated by Jaycees, is wider interest in and support of essential health services. The 1955 observance was a valuable experience in cooperative action for health groups generally, discovered new health leadership and new community support for official and voluntary agency programs.

The kit is available to its 2,800 local chapters with over 200,000 members from Jaycee headquarters. State and local health councils have been alerted to cooperate, as have local affiliates of the American Medical Association and the National Dairy Council by their parent organizations. Where there is no Jaycee chapter, other health organizations promote Community Health Week. In such cases, any local health agency may take the lead, requesting the kit from the National Health Council, 1790 Broadway, New York 19.

### The Where-to-Go-Manual

"Information for Magazine Editors and Writers" about health, recreation, and welfare services and how they work together all year-round through United Funds, Community Chests, and Community Welfare Council is designed to steer magazine writers with general information that will help them get accurate facts on health, welfare, and recreation promptly and effectively at any time during the year. Or obversely it is designed to head off magazine pieces that are misleading or outright inaccurate because of inadequate research. Prepared by Community Chests and Councils from which it is available. 345 East 46th St., New York 17.

### The Hagerstown Health Center

In September, 1955, the Hagerstown Health Center became the new home of the Washington County, Md., Health Department, with its presentation to the people of the county by its donors, Andrew K. and Gladys (Rothstein) Coffman. Both are octogenarians who two years ago decided to do something about a badly needed health center for their county.

Says the Monthly Bulletin of the State Health Department,

> From the expression of his desire to the completion of the modern, native brick and limestone building that is now the Health Center, Mr. and Mrs. Coffman gave not only money, but much of their time and energy. . . . Mrs. Coffman helped with the interior decoration. . . . They also met the cost of landscaping the grounds, picnic area, and playgrounds. Then, because generosity is always contagious, other local individuals, organizations, and industries gave cash donations to purchase medical and office equipment.

### A Philippine Public Health Journal

The eight-year-old Philippine Public Health Association established a quarterly bulletin beginning with the July-September, 1955, issue. The first number includes, among six other articles, the inaugural address of the association's newly elected president, Romeo Y. Atienza, M.D., director of the National Blood Program, Philippine Red Cross. Also included was news of the Association's Award of Distinction to President Ramon Magsaysay for his "outstanding contribution to public health through the artesian wells project" by which some 2,000 artesian wells were installed in the country, particularly in rural areas.

Editor of the Journal is Felipa T. Javalera of the Philippine Red Cross, Manila.

### Maternity Hospital Care Standards

The Texas State Department of Health has recently published a second edition of a 78-page pamphlet on "Hospital Care of Maternity Patients and Their Newborn Infants," first issued in 1953. This is one of several similar state manuals on this subject that have proved useful in helping to elevate the standards of maternity and newborn care. The Texas manual has incorporated many of the salient features of the manual of the American Academy of Pediatrics which, along with the U. S. Children's Bureau, has pioneered in this field.

The pamphlet has been distributed to hospital administrators in Texas. Division of Maternal and Child Health, Texas State Department of Health, Austin. No information on out-of-state distribution.

### California Uses APHA Manual

The California State Department of Public Health, of which Malcolm H. Merrill, M.D., is director, has recently published a "Manual for the Control of Communicable Diseases" in California. The APHA report "Control of Communicable Diseases in Man," eighth edition, 1955, has been used extensively as a basis for this report. In each of the diseases, however, supplemental information about reportability and other steps required in California has been added. A feature is the inclusion of epidemiologic forms used for special studies of a number of diseases. For comprehensiveness and adaptation to a particular state's needs, this volume is truly remarkable.

### Worth Acquiring

"Growing Old Gracefully" and "Making the Most of Maturity" are two recent publications of the Health Education Service, John Hancock Mutual Life Insurance Company, to add to the growing literature designed as aids to adding "life to the years." The first describes the aging process, the second describes itself as being "about interests and activities suitable for the time of retirement." Each is in small compass, two color, simply written, and illustrated with imaginary situations that might well be real or that illustrate real situations. There is but one false note—no one in the illustrations looks as old as he is purported to be. That might lead the real oldster to say, "This is not for me."

The booklets may be had for the asking. Health Education Service, John Hancock Mutual Life Insurance Co., 200 Berkeley St., Boston 17, Mass.

"Meeting the Press" has the suggestions of the National Publicity Council for Health and Welfare Services for a friendly and favorable press. In 11 chapters and 65 pages, the planning of a news publicity program, the methods of working with the press, the use of pictures, what constitutes news, and the real uses of publicity are explained in detail. One of the purposes of a publicity program is defined as providing a "bedrock of public understanding which comes in mighty handy when the time comes for . . . some special project."

This pamphlet, authored by Gertrude W. Simpson, might well be in the hands of staff members of health agencies, for it reminds them that public relations and publicity are not the job of a single person or department but of the entire staff. In effect it asks, what profiteth it to have a good public relations director if the executive "clams up" as soon as an important story, or a scandal, which the pamphlet says does happen even in the best agency, breaks? National Publicity Council for Health and Welfare Services, 257 Fourth Ave., New York 10; $1.50 to members; $2.00, others.

## Annual Reports

"Review from Lansing" published in the December, 1955, Michigan's Health is a new style annual report. The activities of the department are described in terms of the seven ages of man with a photograph for each age. For the infant there is natal and prenatal care, hospital licensing to prevent infant diarrhea outbreaks, and immunization. For early childhood, "the innocent time," there is continued immunization, including polio vaccine, nutrition, first visit to the dentist, and the development of safe and healthful habits.

For school age, or "emergent time," there are hearing and vision screening programs, well rounded school health program, topical application of fluoride, and "booster" doses. For adolescence, or the "awkward time," student school health councils are in order. Tuberculin skin tests, nutrition projects are other health departments services.

The age of young parenthood, "foundation time," brings the need for parent classes, for maternal and child health services to physicians, attention to better home sanitation through assistance with sewage disposal and water supply problem.

Maturity, "responsible time," calls for weight control, detection of early signs of chronic disease, chest x-rays, guarding the health of the worker in industry and on the farm.

And finally old age, the "comfortable time," calls for new light on chronic diseases such as heart disease, cancer, diabetes, and many other ills. This age is described as the time "when the long search for the self is ended and a concern for others can become paramount." Perhaps that too is a prescription for a healthy old age. Michigan State Health Department, Lansing 4.

Muscular Dystrophy Associations of America: Annual Report, 1955, is a story of phenomenal growth. In five years 203 chapters in 40 states and the District of Columbia have been organized and nearly two million dollars have been allocated to 55 institutions for experimental research in every phase of the disease. By the summer of 1955, a network of 20 dystrophy clinics were operated in 13 of the 19 regions with which the association covers the nation.

The association in 1955 called the first National Conference on the Education of the Child with Muscular Dystrophy. A first summer camp was conducted for severely handicapped children. Clinics have been organized in a number of medical centers. Three medical conferences have been held. And finally the sum of two million dollars has been allocated for a Muscle Research Center to be located adjacent to the New York Hospital-Cornell Medical Center, that will serve as "a central base for all of MDAA's research operations." Muscular Dystrophy Associations of America, 39 Broadway, New York 6, N. Y.

"Report to the Citizens of Jefferson County" is the 1954 report of the Birmingham-Jefferson County (Ala.) Health Department. It is in attractive spiral-binding and Christmas colors and does a good job of explaining what the job of a health department is, stressing particularly the importance "of motivating people to do for themselves rather than rely upon agencies."

For this community of nearly 600,000 annual expenditures of the health department total about $1.30 per capita of which about four-fifths is appropriated locally and one-fifth from state and federal sources. During the past seven years local money has increased 76 per cent while state and federal has decreased 53 per cent.

George A. Denison, M.D., is the health officer.

# Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

**Public Health. Its Promise for the Future**—By Wilson G. Smillie. New York: Macmillan (60 Fifth Ave.), 1955. 501 pp. Price, $7.00.

Visions of a future are properly if not invariably built on true memories of the past. History will ever arouse our imaginings and hopes for "What's Next." Fortunate, indeed, are we in the midst of the near chaos of today, to have a wise and amply prepared teacher and practitioner of public health pull aside the curtains of our colonies and states as they once were, to disclose the origins, the ambitions, the tedious frustrations, the unbelievable achievements out of small beginnings which our giant professional forebears carved in the name of medical science for social goals.

This, the latest of Dr. Smillie's notable series of well documented volumes, is a veritable treasure house of orderly facts, chronologically revealing, and illuminated by a wealth of courageous and astute comments on persons, events, and causes, the origins of our programs of 1914 and thereafter.

The reader will regret that the modesty and discretion of the author restrained him from including the latest 40 years of public health in the United States in his picture. We are led firmly and gently to understand the acute and critical formative thoughts, policies, and reasons for success or failure as the elder statesmen of our guild developed their earliest programs, most of which we still struggle to complete. Here we have authenticity, scholarly thoroughness, and truly adequate reference to original documents, with a surprising absence of error in names and dates. Even the clarity of this historical record leaves us in some doubt as to the priorities of our public health tomorrows. HAVEN EMERSON

**Medical Research: A Midcentury Survey. Vol. I. American Medical Research in Principle and Practice. Vol. II. Unsolved Clinical Problems in Biological Perspective**—Edited by Esther Everett Lape and Associates. Published for the American Foundation. Boston, Mass.: Little, Brown (34 Beacon St.), 1955. Vol. I, 765 pp., Vol. II, 740 pp. Price, $15.00 for the set.

The first of the two volumes comprised in this monograph deals with the principles and practice of medical research, and the second with the biological background of a group of outstanding medical problems. An extraordinary compilation of wide sweep and intellectual power, it is presented modestly as an outgrowth of the far-reaching aims of the philanthropist, Edward Bok, who established the American Foundation in 1924, rather than as an exposition of the ideals of modern medical research as set forth by a gifted individual with unusual understanding of its objectives and technical methods, which it is in truth.

Esther Everett Lape and her small staff, with the counsel of a group of consultants representing special fields of medicine, have delineated the scientific structure on which medical research is based, noted the directions it has taken over the years of its development in this country, indicated the manner in which it has been supported financially by private and official agencies, shown how its results are presented to the scientific

and general public, and with an astonishing wealth of detail have portrayed the scientific attack on a group of specific bodily disorders as diverse as cancer, infertility, cardiovascular disease, tuberculosis, virus infections, alcoholism, and mental disease. The central theme of the book is the importance of basic research for ultimate success in healing practice. Progressive physicians, leaders in medical research, public health administrators, and all others concerned with the advance of medicine will find it deeply interesting and rewarding. ESMOND R. LONG

**Feeding Your Child**—By Samuel M. Wishik. New York: Doubleday (575 Madison Ave.), 1955. 223 pp. Price, $3.50.

For the last quarter century there has been a continuing spate of publications designed to meet what is apparently a very real and urgent need and desire on the part of mothers to receive instruction and reassurance on the problems encountered in the feeding of children. Indeed, the upgrading of educational and economical status seems to complicate, rather than simplify this problem.

This volume is one of the best. Written with Dr. Wishik's flair for compressing a great deal of clearly expressed information into few words and with his background in public health and pediatrics it is informational, instructive, and authoritative. The style of writing, which might be described as relaxed but at the same time positive, is ideal in serving the function of reassurance.

In describing the volume no better words can be chosen than those which appear on the title page "A practical, reassuring guide that answers the everyday questions related to feeding from infancy through the school years." The book leads off with a pertinent and excellent chapter on breast feeding, progresses in an orderly fashion to the next to the last chapter dealing with the school years. The final chapter, which deals with the adjustment of the mother to the child during the entire period, serves both as a summary and a final note of practical assurance.

This volume should be near the top of the list of "must reading" for all who are concerned with well child conferences, as well as being of primary usefulness to mothers and students.

The book deserves better and more stimulating illustrations than it has and the use of a light yellow cover for a volume which should be employed as diligently as this, is open to question.

GLIDDEN L. BROOKS

**Principles of Public Health Administration**—By John J. Hanlon (2nd ed.). St. Louis, Mo.: Mosby (3207 Washington Blvd.), 1955. 693 pp. Price, $8.50.

Five years have elapsed since the first edition of this text. The writer points out that during this interval there have been many changes in public health in the United States and in the world, as well as in the writer, for he spent some years in the Andes of South America administering a program of public health under conditions very different from those familiar to him through his previous background.

The volume reflects this new experience but retains most of the material used in the first edition. New emphases present the newer tools, the technics, the materials, and the media. Particularly, they reflect the growing recognition that "public health is essentially a social science in which highly specialized knowledge and technics are applied in a practical sense to the betterment of society." The reviewer found the chapters relating to sociological and cultural anthropological relationships of public health exceedingly provocative. This is the best resumé of this aspect

of public health which the reviewer has seen.

The major sections of this comprehensive volume include five chapters on the philosophy, background, and development of public health; six chapters on administrative considerations in public health; 17 chapters on patterns of public health activities in the United States; and three chapters on public health activities on the international level. The reviewer is impressed throughout with an excellent historical perspective, with the imagination and accuracy in selecting illustrative material and a thorough review, not omitting the new phases of public health, such as accident prevention, rehabilitation, public health dentistry, and mental health. Any practitioner who has a comprehension of the principles set out in this volume will have an excellent start on mastering the specialty of public health administration. For those already in the field the volume provides an excellent review. The book is highly recommended. REGINALD M. ATWATER

**Nutrition Practices: A Guide for Public Health Administrators**—APHA Subcommittee on Nutrition Practices of the Committee on Administrative Practice. New York: American Public Health Association (1790 Broadway), 1955. 80 pp. Price, $1.00.

This guide was prepared by a Subcommittee on Nutrition Practices of the Committee on Administrative Practice of the American Public Health Association. This committee consisted of prominent nutritionists, medical nutritionists, public health administrators, and teachers.

Their aims as stated in the introduction were to assist administrators of public health departments "to initiate, conduct, and evaluate nutrition services." In general, this booklet admirably meets the first two aims (initiating and conducting nutrition services), answering questions such as:

What is the nutritionist's place in public health?
Where are the opportunities for a nutrition program?
When does an agency need a medical nutritionist?
What is the difference between a nutritionist, a dietitian, and a home economist?
What are some of the things a nutritionist may be expected to do?
In what areas does the nutritionist possess special technical skills?
How to plan a nutrition program.
How to plan records and reports.
When to have advisory committees.

All these and many more questions are authoritatively answered and furnish the public health administrator, as well as all others in the field of public health, an authoritative guide to many of their problems in nutrition.

The committee's report failed, however, to measure up to these high standards when it came to "How to evaluate nutrition services." Here the committee was vague and timidly suggested "For instance have there been measurable changes in average weights of chronic disease patients when conditions call for weight loss? Is there a measurable difference in convalescent tuberculosis cases having direct home care as compared with unsupervised cases? These are areas of primary evaluation. Little has been done in the estimation of such revealing matters as these. Tested tools for investigations are few."

This reviewer insists that "scales" have been available for weighing groups of patients; that the x-ray is available for tuberculosis evaluations; and that clinical and biochemical methods for the evaluation of nutritional status of population groups have been available for a decade. How these methods could be used in determining both the necessity for a full-scale nutrition program and their use in evaluating its activities

once it has been started constitutes a major defect in this otherwise useful pamphlet. NORMAN JOLLIFFE

**Buildings of Tomorrow: Guide for Planning Settlements and Community Buildings**—By Fern M. Colborn. New York: Whiteside, Inc., and Morrow (425 Fourth Ave.), 1955. 159 pp. Price, $3.50.

Settlement buildings constructed in an earlier era may prove unsatisfactory in the present day of increased maintenance costs, more public recreation and health facilities, and changing living conditions. Within the past 10 years some 30 member agencies of the National Federation of Settlements and Neighborhood Centers have acquired more suitable buildings and in the immediate future "it is conservative to say that at least twice that number will move into new quarters." Miss Colborn, presently chairman of the Joint Committee on Housing and Welfare, cosponsored by the National Association of Housing and Redevelopment Officials and the National Social Welfare Assembly, has compiled the experiences of those who have already completed buildings to guide those now making plans.

This volume describes various new neighborhood houses in some detail, supplemented by 12 pages of photographs. Since a common error is to overbuild and understaff, practical suggestions are included for selecting the district, the site within the district, and the type of building, depending on existing facilities in the chosen area; for the design and equipment of a building which will "solve problems, not create them"; for choosing and cooperating with the architect; and for raising necessary funds.

A selected bibliography on planning and building and a list of manufacturers of materials used in agency buildings are appended. ELEANOR WATKINS

**Community Adult Education: A Guide for Program Planning and Development**—By Robert H. Snow. New York: Putnam's (210 Madison Ave.), 1955. 170 pp. Price, $3.50.

This well conceived volume is addressed primarily to workers in the adult education field, but holding much interest for the public health field. The principles and procedures, the organization and actions described can be applied in situation after situation called to mind by the public health reader. The word "health" need only be bracketed into the title: for "community adult education," read "community adult health education."

The characteristics of adult "students" are considered carefully. The author points out the need for the adult in our society to maintain self-esteem in knowledge pertaining to the fundamentals of living; to express a need for learning about such fundamentals "is tantamount to confession that one is inadequate to meet life's challenges . . . this defensiveness applies more generally to the central experiences of daily living than to special areas of knowledge or skill. . . . Consequently we find adults participating widely in activities when such participation involves no loss of face." Hence, in study activities related to emotionally charged areas, more ingenious involvement procedures and more skillful leadership practices are needed than in those which the participant can approach more objectively.

Ten chapters cover the reasons for adult education programs, kinds, resources which can be mobilized, furnishing services, leadership, supervision, promotion, and public relations (with emphasis on participation), on widening the scope of service, on program evaluation and adaptation, and upon prospects—a forward look. The chapters on resources and on ways of furnishing services seem particularly useful in terms of the public health

field. The analysis of different types of advisory committees and the variations in functions they perform is refreshingly clear. The responsibilities of the full-time adult health educator are drawn with a steady but determined hand.

The chapter on program evaluation is deceptively simple. Perhaps because of this simplicity of style the author succeeds in bringing the appraisal process out of the esoteric into a matter-of-fact process which most adult (and health) educators will feel better able to undertake in connection with their job responsibilities.

This is not a book to be scanned quickly. One might wish for more headings, more signposts, throughout. This may not be a disadvantage, since this reviewer made many marginal notes relating the content to the public health field, thus converting the volume to a personal work-book of continuing value. This is a book to be added to one's professional library and to the agency bookshelf.

LOUISA ESKRIDGE HAAS

**The Diseases of Occupations**—By Donald Hunter. Boston, Mass.: Little, Brown (34 Beacon St.), 1955. 1046 pp. Price, $20.00.

Almost encyclopedic, this much needed volume coming from England presents material in occupational medicine with a multi-directional orientation. Whereas previous works have offered single facets of this discipline, or have presented the view from a single industry, Hunter records the clinical aspects of occupational diseases richly flavored with history, the impact of the law, the results of social legislation, all tied together through a rich selection of keenly relevant photographs.

Significantly placed as the leading chapter is "Man and His Work," which provides a focus and an operational milieu. Only after coursing through a discussion of industry, social reforms, and the health of the worker does the writing begin to cover the clinical syndromes associated with exposure to, absorption of, and intoxication by harmful substances. The causative materials encountered and described include the metals, carbon compounds, gases, infectious agents, and physical agents. The pneumonoconioses, occupational diseases of the skin, occupational cancer, and accidents comprise the remainder of 15 chapters.

Modestly written in his preface is the author's comment that "the industrial medical officer and the works' chemist will need to consult books which are larger and more detailed than this." Few such exist, and none which is so current as this. The general descriptions of the clinical pictures are complete, but where specific case reports or brief documented events would lend a targeted interest, they are found interspersed among the longer reviews.

Many a student or young practitioner will decry the addition of historical information in a contemporary text, but it is only through a knowledge of pertinent developments that deeper meaning can be assigned to today's information. It is this kind of color that brightens the work, aided by crisp, concise writing. The sources of the photographs are legion, and whereas a few suffer through reproduction, most are clear, detailed, and direct in their stories.

For whom is the book intended? "The student, the general practitioner, and the consultant," the author tells us, but it should be known by and available to all members of the industrial health team—physician, chemist, hygienist, nurse, educator, dentist, and engineer. The nonindustrial practitioner can utilize its pages before placing occupational labels on diseases common to the population at large. The student should be directed to its contents to learn of the specific afflictions of work contacts

and to complete his conception of comprehensive medicine.

All medical and industrial libraries should acquire this newest of writings in occupational medicine, for its cost may limit individual purchases. As a text, as a reference, or as a book for him who only thumbs his medical library, this is the best to date. From Hippocrates to Hiroshima, little is omitted that relates to the man at work.

J. S. FELTON

**Dried BCG Vaccine—World Health Organization Monograph Series No. 28**—By Yoji Obayashi. New York: Columbia University Press (2960 Broadway), 1955. 220 pp. Price, $5.00.

This is a masterly presentation in good readable English of a long series of experiments designed to pin down the important ranges in the major variables which must be considered in the mass production of dried BCG vaccine. These variables are unbelievably numerous, as many other investigators have also discovered, but the practical points appear to be on the way to solution. Those who work with BCG will find this volume an excellent summary of the Japanese experience.

The various chapters cover experiments on the effects of grinding procedures, incubation periods and other cultural factors, temperatures in freezing and storage, vacuum, moisture content, and light. There is also a chapter on present methods of dried BCG vaccine production in Japan with diagrams and pictures of the apparatus used.

The BCG strain used was originally brought back in 1925 by Dr. Kiyoshi Shiga from the Institut Pasteur, Paris. In the light of the impressive results reported it would be interesting to know how this strain compares now with the many different strains of BCG in use in other parts of the world.

FLOYD M. FELDMANN

**The Other Man. A Study of the Social, Legal and Clinical Aspects of Homosexuality**—By Donald J. West. New York: Whiteside, Inc., and Morrow (425 Fourth Ave.), 1955. 224 pp. Price, $4.00.

Homosexuality, most frequent among major sexual deviations, is still one of the great puzzles of medicine. The author of this book, a British psychiatrist, does not pretend to give new answers, but presents an up-to-date survey of the problem for the educated lay reader.

Among the book's high spots are the finely balanced section on treatment methods, past and present, and the lucid remarks on teen-age homoerotism. Unfortunately, the author cannot escape altogether the dilemmas of the physician writing for a nonmedical audience, e.g., while many of his source listings are of a highly technical nature, he also resorts to some very elementary explanations on human physiology and psychology. He, correctly, exposes some of Kinsey's clinical naivete, but becomes himself a little hazy on the difficult subject of bisexuality (attraction to members of either sex), although as a clinician he probably knows better. A few overfacile psychiatric pronouncements strike a discordant note in the otherwise careful writing.

Our society is still largely groping for an answer to the problem of what to do with homosexuals. Perhaps the author is somewhat carried away by certain sweeping demands for sociolegal reforms. On the other hand, anyone who has ever heard presumably responsible people advocate "mass purges" or obtusely restrictive legislation for homosexual patients, recognizes that Dr. West pursues a good cause, and does so most ably and with integrity.

A worth-while, highly informative book. May it reach the large audience it deserves.

JOHN F. OLIVEN

# Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADVANCES IN VETERINARY SCIENCE. Vol. II. Edited by C. A. Brandly and E. L. Jungherr. New York: Academic Press, 1956. 449 pp. Price, $10.00.

BLOOD GROUP SUBSTANCES. THEIR CHEMISTRY AND IMMUNOCHEMISTRY. Elvin A. Kabat. New York: Academic Press, 1955. 330 pp. Price, $8.00.

BONE. AN INTRODUCTION TO THE PHYSIOLOGY OF SKELETAL TISSUE. Franklin C. McLean and Marshall R. Urist. Chicago, Ill.: University of Chicago Press, 1955. 182 pp. Price, $6.00.

CAUSAL FACTORS IN CANCER OF THE LUNG. Carl V. Weller. Springfield, Ill.: Thomas, 1955. 113 pp. Price, $3.00.

CHILDHOOD IN CONTEMPORARY CULTURE. Edited by Margaret Mead and Martha Wolfenstein. Chicago, Ill.: University of Chicago Press, 1955. 473 pp. Price, $7.50.

COST ANALYSIS FOR COLLEGIATE PROGRAMS IN NURSING. PART I—ANALYSIS OF EXPENDITURES. National League for Nursing and the U. S. Public Health Service. Leslie W. Knott, Ellwynee M. Vreeland, and Marjorie Gooch. New York: National League for Nursing, 1956. 166 pp. Price, $3.50.

DIABETIC'S COOKBOOK, THE. Clarice B. Strachan. Austin, Tex.: University of Texas Press, 1955. 304 pp. Price, $6.50.

ECONOMIC NEEDS OF OLDER PEOPLE. John J. Corson and John W. McConnell. New York: Twentieth Century Fund, 1956. 533 pp. Price, $4.50.

EDUCATION DIRECTORY 1954–1955. PART 4—EDUCATION ASSOCIATIONS. Washington, D. C.: Gov. Ptg. Office, 1955. 56 pp. Price, $.25.

EFFECT OF MOTHERS' DIETS ON THE INTELLIGENCE OF OFFSPRING. Ruth F. Harrell, Ella Woodyard, and Arthur I. Gates. New York: Teachers College, Columbia University, 1955. 71 pp. Price, $1.00.

EXCEPTIONAL CHILD FACES ADULTHOOD. Proceedings of the 1955 Spring Conference of the Child Research Clinic of the Woods Schools, held in New York City, May 6–7. Langhorne, Pa.: Woods Schools, 1955. 114 pp. Price, $1.00.

FIELDS OF GROUP PSYCHOTHERAPY. Edited by S. R. Slavson. New York: International Universities Press, 1956. 338 pp. Price, $6.00.

FOOD POISONING. G. M. Dack (3rd ed.). Chicago, Ill.: University of Chicago Press, 1956. 251 pp. Price, $6.00.

FOUNDATIONS OF BIOLOGY. INTERNATIONAL ENCYCLOPEDIA OF UNIFIED SCIENCE. Vol. I, No. 9. Felix Mainx. Chicago, Ill.: University of Chicago Press, 1955. 86 pp. Price, $2.00.

GIVE AND TAKE IN HOSPITALS. A STUDY OF HUMAN ORGANIZATION. Temple Burling, Edith M. Lentz, and Robert N. Wilson. New York: Putnam's, 1956. 355 pp. Price, $4.75.

GOVERNMENT AND HEALTH. Robert T. Daland. University, Ala.: University of Alabama, Bureau of Public Administration, 1955. 218 pp. No charge.

HABIT OF TOBACCO SMOKING. W. Koskowski. New York: John de Graff, 1956. 292 pp. Price, $5.00.

KATHY. Katharine Homer Fryer. New York: Dutton, 1956. 224 pp. Price, $3.50.

MEAL MANAGEMENT. Faye Kinder. New York: Macmillan, 1956. 400 pp. Price, $5.50.

MINISTRY AND MEDICINE IN HUMAN RELATIONS. NEW YORK ACADEMY OF MEDICINE. Iago Galdston. New York: International Universities Press, 1956. 173 pp. Price, $3.50.

MYASTHENIA GRAVIS, SYMPOSIUM ON. Proceedings of the First International Conference on Myasthenia Gravis, December 1954. Henry R. Viets and George D. Gammon, Guest Editors. Reprinted from Vol. XIX, November, 1955, The American Journal of Medicine. New York: Myasthenia Gravis Foundation, 1955, pp. 655–742.

PEOPLE ACT, THE. Elmore M. McKee. New York: Harper, 1955. 269 pp. Price, $3.50.

PHILANTHROPIC FOUNDATIONS. F. Emerson Andrews. New York: Russell Sage Foundation, 1956. 459 pp. Price, $5.00.

POLIOMYELITIS. Papers and Discussions Presented at the Third International Poliomyelitis Conference. Philadelphia, Pa.: Lippincott, 1955. 567 pp. Price, $7.50.

PREVENTIVE MEDICINE IN WORLD WAR II. VOL. II. ENVIRONMENTAL HYGIENE. Edited by John Boyd Coates, Jr., and Ebbe Curtis Hoff. Washington, D. C.: Gov. Ptg. Office, 1955. 404 pp. Price, $3.50.

PRINCIPLES OF PUBLIC HEALTH ADMINISTRATION. John J. Hanlon (2nd ed.). St. Louis, Mo.: Mosby, 1955. 693 pp. Price, $8.50.

PSYCHOSOMATIC ASPECTS OF CANCER. Harold E. Simmons. Washington, D. C.: Peabody Press, 1955. 53 pp. Price, $1.00.

RETROLENTAL FIBROPLASIA ROLE OF OXYGEN. Report of the Sixteenth M & R Pediatric Research Conference. Columbus, Ohio: M & R Laboratories, 1955. 62 pp.

ROLE OF ALGAE AND PLANKTON IN MEDICINE. Morton and David Schwimmer. New York: Grune & Stratton, 1955. 85 pp. Price, $3.75.

SPECIAL EDUCATION FOR THE EXCEPTIONAL:
VOL. I—INTRODUCTION AND PROBLEMS. 453 pp. Price, $5.50.
VOL. II—PHYSICALLY HANDICAPPED AND SPECIAL HEALTH PROBLEMS. 677 pp. Price, $5.50.
VOL. III—MENTAL AND EMOTIONAL DEVIATES AND SPECIAL PROBLEMS. 700 pp. Price, $5.50.
Edited by Merle E. Frampton and Elena D. Gall. Boston, Mass.: Porter Sargent, 1955.

SPEECH AFTER LARYNGECTOMY. Louis M. DiCarlo, Walter W. Amster, and Gilbert R. Herer. Syracuse, N. Y.: Syracuse University, 1956. 184 pp. Price, $4.00.

THE 3 TRIALS OF OSCAR WILDE. H. Montgomery Hyde. New York: University Books, 1955. 384 pp. Price, $5.00.

WATER FOR THE CITIES. Nelson M. Blake. Syracuse, N. Y.: Syracuse University Press, 1956. 341 pp. Price, $4.00.

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# A Selected Public Health Bibliography with Annotations

**Seasonal Sicknesses**—Plotting the incidence of disabling illnesses in a large and readily checked group reveals some seasonal phenomena of wide interest. For both sexes, white and colored, and all ages, the usual peak in winter and drop in summer prevails, but among the several categories of illnesses some marked departures from the "total" trend are found. These will interest you.

ANON. The Season Variation in Disability. Statist. Bull. Metrop. Life Insur. Co. 36, 11:1 (Nov.), 1955.

**From Kansas City**—Some of the discussions that went on in the areas of community sanitation and industrial hygiene at the recent Annual Meeting of the APHA are usefully reviewed for the benefit of those of us who could not attend.

ANON. Industrial Sanitation, Infeeding Problems Aired at Public Health Meeting. Modern San. 7, 12:17 (Dec.), 1955.

**Are You, Too, a Steward?**—The medical director of the American Cancer Society drives home a telling point: "Although the complicity of the cigarette in the present prevalence of cancer of the lung has not been proved to the satisfaction of everyone, yet the weight of evidence against it is so serious as to demand of the stewards of the public welfare that they make the evidence known to all." He ends his admonition in this wise: "if the degree of association between cancer of the lung and smoking were shown to exist between lung cancer and, say, eating spinach, no one would raise a hand against the proscription of spinach from the national diet!"

CAMERON, C. S. Lung Cancer and Smoking. The Atlantic. 197, 1:71 (Jan.), 1956.

**We Are in Business, Partly**—This is a plea that we public health people, along with occupational hygienists and psychiatric professional people, give

more of our time and energy to the betterment of industrial mental health. As the discussion happens to be concerned with Canadian affairs, perhaps the arguments may be viewed with a wholesome objectivity by readers south of the border.

CRUICKSHANK, W. H. Mental Hygiene in Industry. Canad. J. Pub. Health. 46, 12:475 (Dec.), 1955.

**Educated — or Trained?** — How many of the leaders of the field of bacteriologic research were especially prepared for that science, as undergraduates? Not many! This statistic leads to a discussion of training in various technologies vs. education for a life in the sciences. What is said of bacteriological education applies with equal cogency to most of, if not all, the professional disciplines in public health.

HALVORSON, H. O. THE HYBRID BACTERIOLOGIST. Bact. Rev. 19, 4:217 (Dec.), 1955.

**Grim Statistic**—Though more than a half million cancer cases are now diagnosed each year, the numbers will increase by more than half in the next quarter century. In a recent decade the lung cancer rate more than doubled. (Thirty-two of every 100 children born today may expect to develop cancer—for white boys the figure is 31; white girls, 36). Of every hundred survivors to the age of 65, a quarter will still develop cancer. Whites develop cancer more often than do colored people, but the difference is mostly due to skin cancer—a very real instance of racial susceptibility.

HELLER, J. R., et al. Some Observations in the Epidemiology of Cancer in the United States. J.A.M.A. 159, 17:1628 (Dec. 24), 1955.

**Just Good Reading**—This peculiar dispensatory of sanitary and hygienic enlightenment usually hews to its line of papers clearly useful in day-to-day practice, but occasionally it strays a bit. The present departure is to call to your attention a brilliant address (but of no conceivable practical utility) which is a pure delight to read. Don't miss it, no matter where your job interests may be directed.

LINKLATER, E. Prometheus and Tomorrow. Brit. M. J. 4955:1517 (Dec. 24), 1955.

**Unpleasant Item**—Two separate (British) outbreaks of paratyphoid fever were traced to cakes filled with an imitation cream composed, in part, of (presumably communist) Chinese frozen whole eggs.

NEWELL, K. W., et al. Paratyphoid Fever Associated with Chinese Frozen Whole Eggs. Brit. M. J. 4951, 1296 (Nov. 26), 1955.

**Safe to Drink**—A special study was made of a hundred boys who had drunk fluoridated (Newburgh) water for eight years, and they were compared with their Kingston buddies who had had none. Physical differences found actually favored the Newburgh boys, but they were, of course, of no statistical significance.

SCHLESINGER, E. R., et al. Study of Children Drinking Fluoridated and Nonfluoridated Water. J.A.M.A. 160, 1:21 (Jan. 7), 1956.

**Doctor = Teacher**—If the medical profession is to prolong its established doctor-patient relationships, argues this detached viewer of the scene, then practicing physicians must know more about the behavioral sciences and apply them in their patient relationships; also they must take more active parts in the several community health services. These, he says, are the added costs of medical integrity.

SHEPARD, W. P. An Increase in the Price of Medical Freedom. J. M. Ed. 30, 8:440 (Aug.), 1955.

**What Next?**—Though this is only an abbreviated version of a presidential address, the challenges in public health, which this British health officer seems to

see, lie mostly in the areas of mental hygiene and health education. We just thought you would like to know to what our brethren overseas are looking ahead.

STARKEY, J. W. Challenges in Public Health. Pub. Health. 69, 4:184 (Jan.), 1956.

**Community Understanding**—During the year before last 187 water fluoridating installations were completed: eight communities back-slid! Forty-four states (and the D. C.) with 574 water systems, serving 1,021 communities, with a total population exceeding 20 millions are now busily saving teeth. Requirements for sampling and testing procedures are reviewed. Altogether this is an inspiring as well as a useful document.

TASK GROUP REPORT. Consensus of Fluoridation in the U. S. and Canada 1954. J. Am. Water Works A. 47, 12:1210 (Dec.), 1955.

**Health or Welfare?**—Offered here is some British comment on a knotty question concerning problem families—at what point should preventive medicine step in? It is not possible to prevent a full-blown problem family, admits the author, and when public health steps in it should be along minimal lines of help, but including housing, economic assistance, family limitation, nursery care for toddlers, and supervision of adolescents. A rather large order, one might comment.

WRIGHT, C. H. Problem Families. M. Officer 94, 27:381 (Dec. 30), 1955.

**Under Head of New Business**—A listing of the wide variety of investigations and recommendations in the several areas of environmental sanitation that were asked for by the Armed Services, and which the National Research Council's committee furnished, might serve as a sort of check list for sanitary engineers and sanitarians in state and city health departments.

WOLMAN, A. Committee on Sanitary Engineering and Environment. News Report 5, 6:93 (Nov.–Dec.), 1955.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publication in which they appeared; the addresses are furnished for your convenience.

The Atlantic. 8 Arlington St., Boston, Mass.
Bact. Rev. (Bacteriological Reviews), Williams & Wilkins, Mt. Royal and Guilford Aves., Baltimore 2, Md.
Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C.1, England.
Canad. J. Pub. Health (Canadian Journal of Public Health), 150 College St., Toronto 5, Ont., Canada.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.
J. Am. Water Works A. (Journal of the American Water Works Association), 521 Fifth Ave., New York 17, N .Y.
J. M. Ed. (Journal of Medical Education), Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1, Ill.
M. Officer (Medical Officer), Whitefriars House, 72–78 Fleet St., London, E.C.4, England.
Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.
News Report (National Academy of Sciences), 2101 Constitution Ave., Washington 7, D. C.
Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, South, Tavistock Sq., London, W.C.1, England.
Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

# Association News

EIGHTY-FOURTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ATLANTIC CITY, N. J., NOVEMBER 12–16, 1956

## Committee to Strengthen Affiliated Societies and Branches

The President of the American Public Health Association, Professor Ira V. Hiscock, on authorization of the Executive Board and the Governing Council, has appointed a new ad hoc committee on development of functions and services for the strengthening of Affiliated Societies and Branches. Among the charges to this committee are "to explore methods of strengthening and using Affiliated Societies and Branches; to be responsible for developing some over-all principles and plans for such purposes; and to secure wide participation in their development as well as to advise the Executive Board."

The seven-member committee includes officers of both Branches and persons affording a wide geographical coverage as well as linkage with six of the Sections of the Association.

Malcolm H. Merrill, M.D., director of public health, State of California, is chairman. The secretary is Carl L. Erhardt, New York City Department of Health. Other members are Alfred L. Frechette, M.D., of Boston, Mass.; Professor William C. Gibson, M.P.H., Ann Arbor, Mich.; Cassie Smith, M.S.P.H., Mississippi State Board of Health, Jackson (also vice-president, Southern Branch, APHA, and chairman, Public Health Education Section, APHA); G. D. Carlyle Thompson, M.D., Helena, Mont. (president, Western Branch, APHA); and as consultant, Myron E. Wegman, M.D., Washington, D.C., (Chairman, APHA Committee on Constitution and By-Laws).

The Executive Board has expressed the wish that each of the members of this group may become centers for regional consultation on these problems in order to bring the opinions from the grassroots through democratic procedures.

The committee held its first meeting in New York City on February 13, spending a full day in exploring their assignment. The members later met with the Executive Board at its February meeting and reported in person the progress they had made.

The Executive Board has expressed the wish that members and Fellows of the APHA with information and suggestions for this committee should communicate with the members of the committee in order that they may be apprised of regional, state, and local opinion. Steps are being taken to acquaint the officers and members of Affiliated Societies and Branches with this plan for developing good services and relationships in order that the services to professionals in public health may be improved.

## News of Affiliated Societies

**Southern California**—The Southern California Public Health Association met in Glendale on December 16 with an attendance of 300. The program, made up entirely of California

speakers, dealt with the tuberculosis and typhoid pictures in Los Angeles, new developments in California's health administration, the remaining problems in VD control, the California polio immunization experience, national developments in sanitation, United States participation in international health problems, and a preview-cavalcade of health and medical progress. Speaker at the luncheon, attended by nearly 200 persons, was Malcolm H. Merrill, M.D., California state health officer. His talk on "Nutrition in Central America and Panama" related some of his experiences on a recent visit to that area for WHO to study nutritional problems.

Officers elected are:

President: Agnes O'Leary, assistant professor of public health nursing, University of California at Los Angeles

President-Elect: A. Harry Bliss, chairman, Department of Public Health, School of Public Health, University of California at Los Angeles

Vice-Presidents: Everett Stone, M.D., health officer, Riverside County Health Department; J. Albert Torribio, public health educator, Los Angeles Health Department

Secretary-Treasurer and Representative to Regional Board, Western Branch, APHA: Gerald A. Heidbreder, M.D., chief, Venereal Disease Control, Los Angeles County Health Department.

**South Dakota**—The South Dakota Public Health Association met jointly with the state's Social Welfare Conference in Huron, September 28–30, 1955. The joint venture was considered such a success that a similar meeting was planned for 1956. "Better program speakers and a chance to become better acquainted with the other fellows problems and viewpoints" were the chief advantages cited. The retiring president was Marvin T. Whaley, executive secretary of the state's tuberculosis and health association.

Rehabilitation was the theme of the meeting with E. B. Whitten, executive director of the National Rehabilitation Association, as keynote speaker. One entire session was devoted to "Rehabilitation and the Indian in South Dakota."

Newly elected officers are:

President: Harlan Stricklett, administrator, Pennington County Health Department, Rapid City

President-Elect: Floyd Schenk, Yankton

Vice-President: Lee Aase, director, Public Health Statistics, State Department of Health, Pierre

Secretary-Treasurer: T. A. Evans, director, Public Health Education, State Department of Health.

## University of Puerto Rico Accredited for M.P.H.

The University of Puerto Rico's Department of Preventive Medicine and Public Health has been accredited to give the Master of Public Health degree for the academic year 1955–1956. Accreditation was voted by the Executive Board of the Association upon recommendation of the Committee on Professional Education, based upon a detailed report after visitation to the school by Dr. Wilson G. Smillie, consultant on accreditation. With the addition of the University of Puerto Rico, the institutions thus accredited by the Association now number 13, including two in Canada and 10 in continental United States.

Through the interest of the International Cooperation Administration of the United States government the training facilities at San Juan have been extended. The instruction in public health at the University of Puerto is in Spanish. The director of the department is Guillermo Arbona, M.D., M.P.H. E. Harold Hinman, M.D., M.P.H., is dean of the School of Medicine.

APHA membership application blank on page XXXIII

# Employment Service

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication.

## POSITIONS AVAILABLE

**District Health Officer**—to administer a local health program for Greater Anchorage Health District, a metropolitan area of 60,000 population. Staff includes 17 full-time and three part-time personnel. Modern community, six weeks' vacation, sick leave, Social Security retirement. M.P.H. preferred, but experience in private practice or public health may be substituted. Salary from $840 to $990 per month depending on qualifications, plus $80 per month cost of living. J. S. Rood, Secretary, Board of Health, Greater Anchorage Health District, P. O. Box 968, Anchorage, Alaska.

**Health Officer**—Stanislaus County (San Joaquin Valley); well organized, full program; 140,000 population. Salary $877–$1,000; county retirement plan. Contact Mr. Ed Hane, County Administrator, Modesto, Calif.

**Regional Medical Health Officers**—required by the Saskatchewan Department of Public Health. Salary: $8,112–$9,588 per annum. Duties: to perform professional medical and administrative work as medical health officer in an organized health region with a population of approximately 50,000; to develop regional preventive health services and a general public health program. Requirements: graduation from an approved medical school; some medical and administrative experience. Diploma or master's degree in public health desirable but not essential. Benefits: three weeks' annual vacation with pay; three weeks' sick leave, accumulative, with pay; suitable superannuation scheme. Opportunity is available for assisted postgraduate training. For application forms contact Public Service Commission, Legislative Building, Regina, Saskatchewan, Canada. For further information write to Personnel Officer, Department of Public Health, Provincial Health Building, Regina, Saskatchewan, Canada.

**Assistant Disease Control Director**—Salary $657–$821. M.D. degree and two years' experience in epidemiology and disease control. Appropriate graduate study may be substituted for one year of experience. Civil Service Authority, Room 178, City and County Building, Denver, Colo.

**Health Director's Assistant**—Salary range $5,616–$6,656 per year. Open to resident citizens of the United States who possess the minimum qualifications. Medical degree is not required for this position.

**Deputy Director of Health**—Salary range $8,632–$10,296 per year. To assist director in supervision and conduct of a municipal health program. Physician must have some graduate training in public health work, including the practice of medicine and surgery. Must be eligible to practice medicine in Connecticut.

**Public Health Nurse**—Salary range $3,536–$3,952 per year. Open to female resident citizens of the United States who possess the minimum qualifications.

**Medical Technologist I**—Salary range $3,224–$3,692 per year. Open to resident citizens of the United States who possess the minimum qualifications.

**Medical Social Work Adviser**—Salary range $3,796–$4,420 per year. Open to female resident citizens of the United States who possess the minimum qualifications.

Complete details may be secured by writing to Personnel Director, Municipal Bldg., Hartford, Conn.

**Directors**—for two Michigan district health departments. Number one with headquarters at Lake City and number two at West Branch. Attractive resort areas in middle portion of lower peninsula. Salaries start around $10,000; vacation, sick leave, and retirement benefits. Apply Local Health Services, Michigan Dept. of Health, Lansing, Mich.

**Public Health Physician**—Prefer one qualified and interested in position as director, Division of Local Health Services. Would consider individual interested in other types

state health department work. Salary range $9,600–$12,480. Entrance salary dependent upon qualifications. Excellent state retirement plan and state merit system. Position presents challenging public health opportunity. Write Executive Officer, State Board of Health, Helena, Mont.

**Public Health Physician**—M.P.H. Licensed or eligible for New York State. District health officer. Minimum two and one-half years full-time experience. $9,000–$11,500.

**Public Health Bacteriologist**—(milk and water) B.S. Minimum one year experience. $4,250–$5,250.

**Health Educator**—M.P.H. with specialization in public health education and one year experience in an approved agency. $4,025–$4,925.

All positions under civil service. Annual vacation, accumulative sick leave, retirement system. Metropolitan county near New York City. Write Philip J. Rafle, M.D., Commissioner, Suffolk County Department of Health, Riverhead, Long Island, N. Y.

**Director**—Division of Preventive Medicine, State Health Department. Salary $10,000. **Box PH-59,** Employment Service, APHA.

**Public Health Physicians**—for local health officer positions now open in Oregon. Must have M.D. degree from class A medical school plus M.P.H. and be eligible for licensure in Oregon. Starting salary $10,000 or more depending on experience and training. Merit system, state retirement supplemented by Social Security. Write to: Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

**Director, Local Health Unit I-A**—full-time, local program. M.P.H. or board certification and five years' experience in public health, internship and eligibility for Texas license; salary $9,720 to $12,120 and above in metropolitan areas. Write Merit System Council, 814 Littlefield Bldg., Austin 15, Tex.

The position of **Resident in Public Health** in Arlington County, Va., Health Department will be vacant July 1. The stipend is $8,400 per year. The residency qualifies the trainee for examination to the American Board of Preventive Medicine and Public Health. Applicants should apply to the Commissioner of Health, State Dept. of Health, Richmond 19, Va.

**Medical Director**—Tuberculosis sanatorium and old-age home. Responsible for supervision and coordination of modern methods of therapy. Near Kenosha, Wis., a growing industrial city of 55,000 on Lake Michigan. Wisconsin license required; experience in tuberculosis. Willowbrook Sanatorium, 3418 Washington Road, Kenosha, Wis.

**Tuberculosis Positions**—Richmond, Va. Medical doctors to staff new 200-bed, air-conditioned sanatorium, opening July 1, 1956. Adjacent to Medical College of Virginia and its hospital; complete facilities available for chest surgery, surgical, and other consultation; outpatient clinics; occupational therapy; rehabilitation; opportunities for teaching and research; eligibility for licensure in Virginia required; all positions covered by Social Security, state retirement, vacation, and sick-leave.

**Medical Director**—Position open now; salary range, $12,000 to $13,128; five or more years' clinical experience in tuberculosis, four of which served in approved sanatorium and one year in a senior grade; one or more additional years satisfactory experience may be substituted for sanatorium service; board certification in internal medicine desirable.

**Physician B** (3)—Salary range $9,600 to $11,472; two years' experience in approved tuberculosis sanatorium or two years in clinic or office practice under supervision of competent chest specialist; two years' general practice may be substituted for one year sanatorium or nonsanatorium specialized chest disease experience.

**Physician A** (1)—Salary range $8,400 to $9,168.

Apply to: Mack I. Shanholtz, M.D., State Health Commissioner, Richmond 19, Va.

**Nutritionist**—Peoria City Health Department. $375–$450 per month. Requirements: M.P.H. degree from an approved public health school. Some teaching experience desired. Citizenship or residency: United States or eligible citizen; no requirement on residence.

**Public Health Dentist**—Peoria City Health Department. $8,400 per year. Requirements: D.D.S. and M.P.H. degree. Experience desired, but may be waived. Citizenship or residency: must be citizen; no requirement on residence. Fred Long, M.D., Commissioner, Peoria Dept. of Health, Peoria 2, Ill.

**Dental Health Consultant**—$375 to $500. Degree with a major or certificate in dental hygiene required. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

**Dentist**—Director of city-wide program at a salary range of $7,239 increasing to $8,222. Five-day week, pension, civil service appointment. Excellent general health program. Dr. E. R. Krumbiegel, Milwaukee Health Dept., City Hall, Milwaukee 2, Wis.

**Public Health Nurse**—for rapidly expanding generalized nursing program. Salary ranges, depending upon experience and qualifications: $276–$322; $292–$340; $313–$364. Additional pay increases are attainable by merit and seniority. Excellent opportunity for promotion. Fifty dollars automobile allowance. Forty-hour week, three-week vacation, liberal sick leave and retirement benefits.

Must be eligible for Colorado registration. Apply: John S. Anderson, M.D., Director, Pueblo City-County Health Dept., City Hall, Pueblo, Colo.

**Sanitarian II**—Salary range $329–$383 in four years. Additional increases based on merit and seniority. Good opportunity for promotion. Car provided. Forty-hour week, three-week vacation, liberal sick leave and retirement benefits. Must have baccalaureate degree and two years of full-time employment in a generalized sanitation program. Apply: John S. Anderson, M.D., Director, Pueblo City-County Health Dept., City Hall, Pueblo, Colo.

**Qualified Supervisory Public Health Nurse**—Three-nurse voluntary agency, generalized program. Four weeks' vacation, sick leave, Social Security, 39-hour week. Car provided. Apply to Mrs. John H. Kolb, 7 Chestnut St., Seymour, Conn.

**Qualified Public Health Nurse**—for staff duty in well established Visiting Nurses Association. Salary open, mileage allowance, 40-hour week, good personnel policies. Write Director, Visiting Nurses Association, 703 Grove St., Rockford, Ill.

**Clinical Instructor**—to assist with field experience in collegiate school of nursing. Degree in public health. Experience in administration and teaching. Apply Dean, School of Nursing, Northwestern State College, Natchitoches, La.

**Public Health Nurses**—$57–$72 per week. Graduation from an accredited school of nursing, completion of a four-month course in public health nursing, and possession of a state certificate as a registered nurse or eligibility thereof. Apply Maine State Dept. of Personnel, State House, Augusta, Me.

**Public Health Nursing Supervisor**—Generalized nursing program in a large city health department; diploma and collegiate student affiliation. Salary range $4,200–$5,088, 40-hour week, 12 working days vacation, sick leave, pension. Bachelor's degree, approved PHN course and three years' experience required, one of which should have been in a supervisory capacity. Write: Bureau of Public Health Nursing, Room 703, Municipal Bldg., P. O. Box 1877, Baltimore 3, Md.

**Public Health Nursing**—Positions available in Health Department with the city of Flint, a rapidly growing city of 180,000 population. Beginning, intermediate, and administrative positions are available. Five-day, 40-hour week, with liberal retirement, vacation, and sick leave policies. Beginning salary rates, depending on experience and qualifications, $3,498, $3,783, $4,147 with automatic increases. Apply Flint Civil Service Commission, City Hall, Flint, Mich.

**Public Health Nurse**—state level consultant, local supervisors and staff. Choice of locations. Liberal vacation and sick leave. First level professional PHN salary range $300–$400, intermediate level $340–$440, supervisor $380–$480, consultant $420–$525. Write State Board of Health, Helena, Mont.

**Qualified Public Health Nurse**—Generalized program in full-time health department. Forty-hour, 5-day week, 11 paid holidays, 12 working-days' vacation, sick leave, retirement plan. Beginning salary $3,881 per year. Apply: Morris Chelsky, M.D., Health Officer, Lewis County Health District, Court House Annex, Chehalis, Wash.

**Sanitary Engineer**—with bachelor's degree and three years' experience in health departments or substitute a year of graduate work for a year's experience for position on the state staff of the Arizona State Health Department. Starting salary $5,328. More highly qualified applicants may receive a higher starting salary. Write to Arizona Merit System Council, 429 State Office Bldg., Phoenix, Ariz.

Wanted: **Sanitary Engineers**—for positions with state and local health departments. Openings for beginning and experienced engineers with college degrees. Write for announcement showing minimum qualifications, salary ranges, and other information to Florida Merit System, 307 W. V. Knott Bldg., Tallahassee, Fla.

The City of Cedar Rapids, Iowa, is accepting applications for the position of a **Public Health Engineer**—Age 23–50 years. Qualifications: degree of civil engineering from an accredited school of engineering. Salary, $450–$525 per month, depending upon your experience and background. Applications must be returned by April 1, 1956. Applications may be obtained by writing the Civil Service Commission, City Hall, Cedar Rapids, Iowa.

**Engineers**—Two openings for engineers with occupational or industrial health experience. Starting salary dependent upon experience and qualifications. For specific details contact Merit System Supervisor, Kentucky State Dept. of Health, 620 S. Third St., Louisville, Ky.

**Assistant Engineer**—in a generalized environmental health program for an urban county in Michigan. Starting salary $5,470 per year with merit increases available over a four-year period to $6,670. B.S. degree in engineering (sanitary option) or equivalent, and three years' public health experience necessary. After six-months' orientation, a limited amount of job time may be made available for pursuing graduate studies at the University of Michigan School of Public

Health. Write Otto K. Engelke, M.D., Health Officer, Washtenaw County Health Dept., County Bldg., Ann Arbor, Mich.

**Sanitarian**—Generalized sanitation; salary range $351–$413. County automobile or eight cents per mile, 37½-hour week, liberal personnel policy. Write: Butte County Health Dept., P. O. Box 1100, Chico, Calif.

**Health Educator**—M.P.H. to direct established health education program in a well staffed health department housed in a new modern building. Beginning salary to $4,500 a year plus eight cents per mile travel in own automobile. J. H. White, M.D., Director, Weld County Health Dept., Box 521, Greeley, Colo.

**Health Educator**—Woman between 30–40 years. Must have M.P.H. degree and some experience. Car necessary, five-day week, car and travel allowance, Social Security, medical coverage. Salary open. Victor Schoch, Executive Director, Washington State Heart Association, 3114 Arcade Bldg., Seattle 1, Wash.

**Psychiatric Social Worker**—New child guidance clinic in West Bend, Wis., 33 miles from Milwaukee. Responsibility includes intake, casework with parents of children in treatment, therapy of children, community consultation and education. Team of psychiatric social worker, psychologist, and part-time psychiatrist. $4,572–$5,352. Master's degree with psychiatric sequence, plus two years' experience, some of which has been in child guidance. Amy Louise Hunter, M.D., State Board of Health, 1 W. Wilson St., Madison 2, Wis.

**Dental Hygienists** (2)—Salary range $322–$392 plus eight cents mileage allowance. School dental health program. Retirement plan, medical plan, sick leave, vacation. Must have California license. Apply W. Elwyn Turner, M.D., Director, Santa Clara County Health Dept., San Jose, Calif.

**Executive Secretary**—State Tuberculosis Association. Full responsibility for program within policies established by Board of Directors. Essential requirements: college degree and five years' experience in responsible tuberculosis association position. Starting salary $8,500. Retirement plan, Social Security, travel allowance. Write: Selection Committee, Florida Tuberculosis and Health Association, 235 E. Monroe St., Jacksonville 2, Fla.

**Public Health Analyst-Business Manager**—Starting salary $338 or higher, depending upon background and qualifications. Car furnished. Excellent surroundings with office in beautiful city of Santa Barbara. Contact Joseph T. Nardo, M.D., M.P.H., Health Officer, Santa Barbara County Health Dept., P. O. Box 119, Santa Barbara, Calif.

**International Vacancies**

**Malariologist, Public Health Administrators, Public Health Engineers, Public Health Nurses, Nurse Educators**—There are several positions open in Latin America and the Caribbean for persons in the above categories. The essential qualifications are public health training and extensive field experience. Malariologists need considerable experience in malaria programs and use of the new residual insecticides. Nurses require advanced training in public health nursing or nursing education, as well as extensive experience in supervision, administration and/or teaching. Spanish is desirable in nearly all cases. Salaries and allowances range from $6,000 to $11,000 per annum. For further particulars, write to the Personnel Officer, PASB/WHO, 1501 New Hampshire Ave., Washington 6, D. C.

**Public Health Engineer**—United Nations World Health Organization invites applications for this post on a schistosomiasis control and demonstration team in Egypt. Candidates should be qualified public health or sanitary engineers, although undergraduate training in engineering may also be considered. In both cases specific experience in schistosomiasis control by the use of molluscicides is required. Additional experience in vector control in relationship to irrigated areas is desirable. The post involves responsibility for planning, organizing, and supervising the environmental sanitation phases of the project, including (1) the use of molluscicides in irrigation channels and drains and weed clearance, to reduce vector snail populations; (2) the organization of sanitation measures to prevent pollution of waterways and exposure of population to infection in waterways and provide for safe water supplies and excreta disposal facilities; (3) to act as adviser to the government, through the project's senior adviser, on public health engineering technics applicable to schistosomiasis control and to train nationals in such technics. Two-year contract, subject to renewal, commencing salary $6,000 United States tax free. Written applications, in English, should state nationality, age, family, education, full details past and present employment, and should be addressed to PHE/EMRO, Personnel Section, World Health Organization, Palais des Nations, Geneva, Switzerland. Only those candidates whose qualifications and experience are considered really suitable will receive reply. Closing date April 6.

**Chief Public Health Adviser**—I.C.A. Mission, Afghanistan. M.D. and M.P.H. degrees plus experience in responsible local or state public health administration. Duties: to advise the Royal Afghan Ministry of Public Health on development of an expanded public health service including establishment of a demonstration public health center for the Helmand Valley Area.

**Chief, Public Health Division**—I.C.A. Mission, Indonesia. M.D. and M.P.H. degrees plus experience in responsible local or state public health administration. Duties: to assist the Republic of Indonesia in the development of a modern public health control program and to train indigenous personnel, including the strengthening of academic institutions training professional and subprofessional public health workers.

**Chief Public Health Adviser**—I.C.A. Mission, Seoul, Korea. M.D. and M.P.H. degrees plus experience in responsible local or state public health administration. Duties: to advise the Republic of Korea's Ministry of Public Health on the development and implementation of a comprehensive public health program.

**Public Health Officer**—I.C.A. Mission, Paramaribo, Surinam. M.D. and M.P.H. degrees plus experience in responsible local or state public health administration. Duties: to advise the director of health for Surinam on improved public health administration; to plan and organize public health activities, particularly with respect to rural health services; and training.

**Medical Officer**—I.C.A. Mission, Basra, Iraq. M.D. and M.P.H. degrees plus experience in responsible local or state public health administration. Duties: to organize and develop a first-class Western type public health organization throughout Basra Liwa; to serve as director of the Public Health Demonstration and Training Project.

Two-year tour of duty minimum. Attractive salary and adequate living allowances. U. S. Public Health Service, Division of International Health, Washington 25, D. C.

## POSITIONS WANTED

**Public Health Dentist**—Broad experience in the administration of educational and treatment program for children. Desires position with a city or state health department. M.P.H. degree. Will furnish necessary references. **Box D-15,** Employment Service, APHA.

**Public Health Engineer**—M.P.H. Five years' experience, three years directing environmental sanitation activities in a suburban district of a large metropolitan health department. Desires responsible position with a state health department or full-time local health unit. Write **Box E-33,** Employment Service, APHA.

**Administrator**—Hospital, medical group. Fifteen years' experience in all phases of institutional organization, construction, and management. **Box C-29,** Employment Service, APHA.

## Commercial Advertisements

**All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.**

### OPPORTUNITIES AVAILABLE

(a) Director, preventive medicine; state health department; Midwest. (b) Commissioner of health; attractive city located in the Berkshires. (c) Public health physician particularly well qualified epidemiology; foreign assignment; unusual opportunity. (d) Director, student health department; 3,000 students; opportunity affiliation state health department; West. (e) Public health nurse supervisors; leading American company; Latin America, Mediterranean locations; paid transportation; attractive accommodations; $6,000–$9,200; (f) Administrative nurse; assist with collegiate program, instruction in public health nursing; faculty status; coed university; Midwest. (g) Director, well organized Visiting Nurse Association; university city, East; $6,300. (h) Public health nurse consultant; advise local, public, private agencies; correlate with state board of health; formulate standards, policies; to $6,300; Southwest. (i) Health educator; county health agency; master's degree, five years' experience required; $5,400–$6,000; university city, Pacific Coast. (j) Instructor in health and safety; new position to commence fall, 1956; state university; Midwest. (k) Health inspector experienced meat and dairy products; foreign; $8,400. (l) Sanitary chemist; research involving problems related to sanitation and sanitary engineering; state college; West.

### OPPORTUNITIES WANTED

(a) Physician, M.P.H., Dr.P.H., Johns Hopkins; extensive public health experience abroad; Diplomate American Board. (b) Public health nursing administrator; B.S., Ed., M.P.H.; seven years' experience as public health nursing administrator and teacher. (c) Health educator; M.P.H., Harvard; eight years, director, state health department. (d) Sanitary engineer; Sc.D., sanitary engineering; four years, sanitary engineer in industry.

# News from the Field

## WHO News

### World Standard of Living Gains

Late in January the United Nations issued a roundup summarizing the gains made by the specialized agencies and other branches of UN in "basic projects to improve the lot of man in the modern world." Increase in the amount of technical assistance provided through experts and fellowship was particularly noted. For economically underdeveloped areas efforts continued to raise living standards through improvement of health, farm practices, educational facilities, labor methods, weather forecasting, transport, and communications.

WHO is one of the 10 autonomous bodies that cooperate with UN under special agreements. The roundup indicated that nearly half a billion persons had benefited from control campaigns assisted by WHO against malaria, tuberculosis, and treponemal diseases, including yaws, pinta, and "endemic" syphilis. In India, for example, 63,000,000 young people were examined for tuberculosis of whom 22,000,000 were vaccinated. In the malaria campaign it is estimated that this disease may be wiped out in many parts of the world in 10 years.

In the campaign against yaws and allied diseases, 40,000,000 persons had been examined at the end of 1955, with 10,000,000 treated with penicillin. The cost of this campaign had been reduced to 10 cents per person examined, 75 cents per person injected with penicillin.

WHO gave its attention to the medical and public health aspects of atomic energy through sharing in the first UN Conference on the Peaceful Uses of Atomic Energy. At the request of the World Health Assembly a public health program was outlined aimed at the protection of populations against dangers of radiation as follows:

1. The training of health personnel in nuclear energy
2. Spreading knowledge on radiation health problems such as the protection of populations, the use of radioactive isotopes in medical research and in the diagnosis and treatment of diseases
3. A world-wide study of the somatic effects of radiation on human beings
4. A world-wide study of the genetic effects of radiation

WHO also assisted the Swedish government in organizing a seminar in Stockholm for the training of health physicists.

A group of scientists, under the sponsorship of WHO discussed polio vaccination coming to the conclusion that "the Salk type vaccine based on inactivated virus yielded good protection to children."

The Food and Agriculture Organization also reported increased activities in projects that have important health aspects, among them combating livestock diseases, training local farm leaders, mechanizing fishing craft, improving land and water use and marketing methods. Of particular significance is the Indonesian experiment in producing protein-rich soya bean milk.

The roundup of these activities is included in press release SA/181 of January 24, 1956, which is available from the UN Department of Public Information, United Nations, N. Y.

### World Health Day, April 7

World Health Day will be celebrated by many countries throughout the world on April 7, 1956. The theme, "Destroy Disease-Carrying Insects," will be used by WHO, governments, civic groups,

and others to call attention to this public health problem of paramount importance in many countries of the world and to stimulate increased measures to combat insect-borne diseases.

"Clean Water for Better Health" and "The Nurse-Pioneer of Health," the themes in 1954 and 1955, respectively, did much to arouse public interest in these two facets of public health.

The Pan American Sanitary Bureau, WHO's Regional Office for the Americas, is making available a selection of basic material, such as articles by experts and posters for display in the four languages used on this continent, English, Spanish, Portuguese, and French. 1501 New Hampshire Ave., N.W., Washington 6, D. C.

### Dr. Soper Reports

"Annual Report of the Director" is the 1954 story of the Pan American Sanitary Bureau, Regional Office of WHO for the Americas. It is a handsome document done by offset process, liberally illustrated with photographs and using Aztec motifs on the cover.

A 21-page introduction is in effect an eight-year history of PASB, as well as a setting down of some of the principles on which it has operated and the goals it has tried to reach.

The 1954 story is divided into three main subjects—communicable diseases, public health administration, and education and training. An appendix lists 78 projects in 27 states or territories and 36 projects not related to a particular country.

Fred L. Soper, M.D., is director of the Pan American Sanitary Bureau, 1501 New Hampshire Ave., Washington 6, D. C.

### Bulletin Notes Occupational Health

The WHO Bulletin, in the October, 1955, issue (Vol. 13, No. 4) has a group of selected papers from two occupational health seminars held respectively in Leyden in 1952 and Milan in 1953. "Occupational health," says the introduction, "is no longer confined to the problems of occupational diseases and accidents but has been broadened to cover preventive medicine in industry and all other places of employment."

The bulletin contains 17 articles in either French or English with résumés in the other language. Preemployment examinations, sickness absenteeism, mental health, industrial psychiatry, physical capacity, employment, and medicosocial problems of the aging worker, industrial health services in large and small plants, respectively, human factors related to accidents, and industry's contribution to rehabilitation each come under review. Included also are summaries, in both English and French, of the discussions at the Leyden and Milan seminars.

Like other WHO publications this bulletin is available from the Columbia University Press, 2690 Broadway, New York 27, N. Y.; $2 per copy, $12 per year.

### Insect Vectors in Air Traffic

A survey of existing regulations for disinfestation of aircraft in 98 states and territories makes up the content of "Control of Insect Vectors in International Air Traffic," recently reprinted in a separate brochure from the 1955 International Digest of Health Legislation. This review is made particularly necessary because only 30 countries have ratified the provisions of the 1944 International Sanitary Convention for Aerial Navigation.

Also included are the various recommendations in this matter made to the World Health Organization by its expert committees, including the Expert Committee on International Quarantine; 70 cents.

### Educational Television Changes

The National Citizens Committee for Educational Television, Washington, D. C., suspended operations, January 31. In its final report Elizabeth S. Colclough reports that there are now 18 educational TV stations on the air and that seven more will begin broadcasting within the next few months. There are said to be 39 million viewers in the nation potentially accessible to these stations.

It is announced that under the terms of the new grants of the Ford Foundation the NCCET functions dealing with information and educational TV material will be transferred to the Educational Television and Radio Center, 1610 Washtenaw Ave., Ann Arbor, Mich.

### Chronic Illness News Letter Changes

The Chronic Illness News Letter beginning with the February, 1956, issue is being published by the Council on Medical Service of the American Medical Association. Heretofore it was issued by the Commission on Chronic Illness which will terminate in June, 1956. In making the announcement it is reported that "The present mailing list of the News Letter will be maintained and no change in editorial policy is contemplated." The Editorial Committee is made up of three members of the present commission, Henry Mulholland, M.D., Lucille Smith, and Dean W. Roberts, M.D., as well as Edward L. Bortz, M.D.

### Nation's Medal to Dr. Salk

In a ceremony at the Department of Health, Education, and Welfare in Washington, D. C., January 26, Dr. Jonas E. Salk received a gold medal from the government in recognition of his "great achievement" in developing a vaccine against poliomyelitis. The medal, proposed by President Eisenhower and authorized by Congress, was presented in behalf of the President and the nation by HEW Secretary Marion B. Folsom.

### Bluefield-Mercer Health Department

The first health department to be created under new legislation passed by the 1955 West Virginia Legislature is the Bluefield-Mercer County Health Department. Bluefield and Princeton have merged their health services with those of the county to create a city-county department serving the entire county population of more than 75,000.

The health officer, who began his duties in the Bluefield headquarters office on February 1, 1956, is N. Allen Dyer, M.D., formerly health officer of the Monongalia County Health Department. He is the son of Newman H. Dyer, M.D., state health officer.

### New York City Endorses Fluoridation

The New York City Board of Health in its report to the mayor on fluoridation summarizes the results of an intensive study made by the board into various aspects of fluoridation of water supplies. A summary of the 50-page report says, "There is no doubt that the overwhelming weight of competent scientific opinion in this country and in New York City itself, is that water fluoridation is an effective, safe, practical and much needed public health procedure. The New York City Board of Health reaffirms its endorsement on the basis of the exhaustive study outlined in the foregoing report."

The study undertaken by the City Health Department at the request of Mayor Robert F. Wagner concludes as follows:

1. Dental decay constitutes a serious health problem which remains largely neglected due to the undramatic nature of the disease, the cost of full treatment, and the lack of sufficient professional personnel.

2. The overwhelming evidence obtained indicates that water fluoridation offers an ultimate reduction of about 60 per cent in the accumulation of dental defects in New York City's resident population.

3. No harm has been demonstrated or can be anticipated from the consumption of fluoridated water at the recommended level.

4. The adjustment of the fluoride content of drinking water to 1 ppm fluoride is, in principle and practice, the soundest and most effective approach to caries prevention on a large scale.

5. It is possible to furnish fluoridated water to all of the people of the city for about one-third the price of providing fluoridation for school children only by any other method.

6. A summary of judicial decisions and authoritative legal opinions indicated no legal contraindication. The essential decision must be based on an evaluation of the importance of the dental decay problem and the benefits, safety and practicality of the water fluoridation procedure.

## Chronic Ill Needs in Michigan

The Bureau of Public Health Economics of the School of Public Health, University of Michigan, is conducting a survey of the need for facilities for the care of patients with long-term illness in Michigan. The survey, scheduled for completion in 1956, is being carried out under a contract with the Michigan Office of Hospital Survey and Construction in accordance with the provisions of the Medical Facilities Act passed by Congress in 1954.

Kenton Winter, an economist, formerly with the Survey Research Center, has been appointed research associate, Bureau of Public Health Economics, to direct the survey.

## Woman of the Year Award to Dr. Boak

Ruth A. Boak, M.D., associate professor of infectious diseases and pediatrics, University of California School of Medicine, Los Angeles, has been selected the Los Angeles Times Woman of the Year in the field of medicine. The Times Award has been made annually since 1950 to women of outstanding accomplishment during the year.

Other recent honors to Dr. Boak are a Fulbright Award to spend a year's sabbatical leave in Japan doing research at the Institute of Infectious Diseases, Tokyo University; for her research on venereal diseases, including the establishment of a laboratory for the Treponema pallidum immobilization test, she received a citation from the U. S. Army. In Korea she was made an honorary member of the 38th Parallel Medical Society for her work in hospitals and schools.

Dr. Boak is a Fellow of the American Public Health Association.

## National Institute of Allergy and Infectious Diseases

According to a notice from the U. S. Public Health Service, the National Microbiological Institute at Bethesda, Md., one of the group of institutes under the auspices of the Public Health Service, has been given the new name of National Institute of Allergy and Infectious Diseases. A new advisory council is being formed to guide the research and training activities of the institute.

## Maryland Public Health Association

The charter convention of the Maryland Public Health Association was held in Annapolis on December 8, 1955. The purpose agreed upon is "to bring into one organization persons interested in all phases of health so that there will be better dissemination of knowledge and less duplication of activities." This new state association looks forward to eventual affiliation with the American Public Health Association. Annual dues were set at $2.

Officers elected are as follows:

President—Philip Sartwell, M.D., professor of epidemiology, Johns Hopkins School of Hygiene and Public Health

President-Elect—William H. F. Warthen, M.D., Baltimore county health officer

Vice-President—William Martin, secretary, Division of Medical and Health Agencies, Baltimore Council of Social Agencies

Secretary—Claudia Galiher, executive director, Montgomery County Tuberculosis and Heart Association

Treasurer—Ferdinand Korff, director, Bureau of Food Control, Baltimore Health Department

## The Hans Zinsser Memorial Fund

Establishment of the Hans Zinsser Memorial Fund of the Harvard University School of Public Health is being undertaken by friends, colleagues, and students of the late Hans Zinsser, M.D. (1878–1940). Noted as a teacher, research scientist, and author, Dr. Zinsser was a Harvard faculty member from 1921 until his death in 1940. The purpose of the fund in his memory has been set forth by a group of sponsors who wrote, in part:

The Fund will be allowed to accumulate until the income therefrom has become sufficient to be devoted effectively to purposes in keeping with Dr. Zinsser's deep concern for human health improvement. The originators of the Fund have noted that Dr. Zinsser's interests were wide-ranging, that he shifted his attack from time to time in order to direct it at a disease or other problem which he recognized as currently important. Moreover, it was noted that his investigations encompassed both laboratory and field work and that he devoted himself wholeheartedly to teaching as well as to research. It is intended, therefore, that the Zinsser Fund could be used in any part of the University, its scope to include any disease or condition which may from time to time constitute a recognized peril to human health. Support for promising young scientists, support of field or laboratory projects, and awards for outstanding achievements by students and research workers in the health field are various ways which have been suggested for utilizing the Zinsser Fund. We feel that the objectives of the Fund can be carried out most effectively if it reaches at least $100,000.

The Fund will be administered by the Dean of the Faculty of Public Health. He will receive applications and proposals for use of the income and will recommend to the president and fellows of Harvard College how it shall be allocated. John C. Snyder, M.D., dean of the Harvard School of Public Health, is a microbiologist who was a research associate of Dr. Zinsser at Harvard.

The sponsors of the Fund are: Stanhope Bayne-Jones, M.D., John F. Enders, Ph.D., Jerome D. Greene, Mabel S. Ingalls, Rosanna Thorndike Leviseur, George Cheever Shattuck, M.D., Edward A. Weeks, Jr., Julia T. Weld and Edwin B. Wilson.

Contributions to the Hans Zinsser Memorial Fund may be sent to the Secretary, Harvard School of Public Health, 55 Shattuck St., Boston 15, Mass. Checks should be made payable to Harvard University.

## PERSONALS

HUGH ADAMS, former field consultant, Ohio Tuberculosis and Health Association, has succeeded WALTER FURBUSH as associate in personnel services, National Tuberculosis Association, New York City.

C. EARL ALBRECHT, M.D.,* Alaska commissioner of health, has resigned to become assistant director, Ohio Department of Mental Hygiene and Correction, Columbus. He has been succeeded by former Deputy Commissioner of Health, CHARLES R. HAYMAN, M.D.,* to serve the unexpired term of two years.

EARL J. ANDERSON, former chief, Home Accident Prevention Project, in the Massachusetts Department of Public Health, is now associate sanitary engineer in charge of the Plumbing Research Laboratory, Lawrence Experiment Station. He has been succeeded by HAROLD D. ROSE,* field program supervisor, Division of Sanitary Engineering.

BUELL W. BEADLE, Ph.D., former executive vice-president and general manager, George W. Gooch Laboratories, Los Angeles, is now manager of biochemistry research, Southwest Research Institute, San Antonio, Tex.

MORLEY BECKETT, M.D., M.P.H.,* has been appointed director of the University of Michigan Health Service, Ann Arbor, succeeding WARREN FORSYTHE, M.D.,* retired. Dr. Beckett serves also as professor of public health in the School of Public Health.

* Fellow.
† Member.

JAMES CHESTER BELL, former acting director, has been appointed director, Bureau of Sanitation, Pennsylvania State Health Department.

JOHN H. BROWE, M.D.,* director, Bureau of Nutrition, New York State Department of Health, is on a three-month mission to Iran and Pakistan under the auspices of the Department of Defense and the Interdepartmental Committee on Nutrition for National Defense in the National Institutes of Health.

JEROME W. BROWER,† former chief, Departmental Administration Section, Minnesota Department of Health, has succeeded ROBERT N. BARR, M.D.,* as deputy executive officer.

MIGUEL E. BUSTAMANTE, M.D., Dr.P.H.,† secretary-general, Pan American Sanitary Bureau, Regional Office, WHO, Washington, D. C., has resigned to join the staff of the School of the National Department of Health and Social Welfare, Mexico City, Mexico.

CATHERINE K. CAMPBELL, former school health consultant, Wisconsin State Board of Health, is now assistant professor of health education, Wayne University, Detroit, Mich.

JEAN A. CURRAN, M.D., associate executive dean for medical education, State University of New York College of Medicine at New York City, Brooklyn, is on a three-month leave of absence to conduct a survey of medical education in the Philippine Islands for WHO.

ARCHIBALD S. DEAN, M.D.,* of the Buffalo Regional Office, New York State Department of Health, has been appointed head of the Department of Preventive Medicine and Public Health, University of Buffalo School of Medicine.

FRED DONALDSON has succeeded W. A. SCOTT, D.V.M., as health commissioner, Canton, Ohio.

MARGARET DUBOIS, M.D.,† chief, Division of Hospitals, Connecticut State Department of Health, has resigned to become chief, Division of Hospital Facilities, Ohio State Department of Health.

FREDERICK A. DUNHAM, M.D.,† former assistant director, Division of Local Health Services, Massachusetts Department of Public Health, has been appointed to succeed the late WALTER J. PENNELL, M.D.,* as northeastern district health officer, with headquarters in North Wilmington.

DUMONT ELMENDORF, JR., M.D., former senior medical bacteriologist, has been appointed assistant director for clinical research, Division of Laboratories and Research, New York State Health Department, Albany.

STUART C. FISHER, M.P.H.,* former chief, Vital Records, San Antonio Health Department, has been appointed personnel officer, Texas State Department of Public Health.

JAMES W. FORISTEL, former associate general counsel, Department of Health, Education, and Welfare, has resigned to become legal adviser, Washington Office, American Medical Association.

DWIGHT M. FROST, M.D., formerly on the staff of the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, is now director of the new Department of Physical Medicine and Rehabilitation, University of Nebraska College of Medicine, Omaha.

MARY E. GARTHWAITE, M.D., has succeeded J. C. GEIGER, M.D.,* as health officer of Oakland, Calif.

R. H. HAZEMANN, M.D., M.P.H.,† Paris, France, is now inspector general, French Ministry of Health. Dr. Hazemann is a 1929 graduate of the Johns Hopkins School of Hygiene and Public Health.

PATRICIA HUNT, M.D., has been appointed health officer of the Amherst-Nelson Health Department, Amherst, Va.

HERMAN KLEINMAN, M.D.,† former physician, U. S. Indian Service, Red Lake, now heads the polio surveillance unit, Minnesota State Department of Health.

HILDA KNOBLOCH, M.D., Dr.P.H.,* formerly assistant professor, Division of Maternal and Child Health, Johns Hopkins School of Hygiene and Public Health, has been appointed to the staff of the Children's Hospital, Columbus, Ohio, as associate professor of pediatrics, Ohio State University College of Medicine.

CLAYTON B. MATHER, M.D.,* former director of health, Waterbury, Conn., has been appointed regional medical director, State Region 5, Pennsylvania State Department of Health, including 14 counties, with a population of nearly one million. Headquarters are in Lewistown.

MALCOLM H. MERRILL, M.D., M.P.H.,* director of public health, California State Department of Health, Berkeley, has been reappointed by Governor Knight for a four-year term expiring January 1, 1960.

FRANK S. NASH, health program representative, U. S. Public Health Service, previously assigned to Kansas, has been transferred to the South Dakota State Department of Health to assist in the epidemiological investigation of communicable diseases.

HIRAM NICKERSON, health educator, Berkshire District Office, Massachusetts Department of

* Fellow.
† Member.

Health, has resigned to become executive secretary, Tuberculosis Association of Bangor, Maine.

GEORGE T. NILSON, M.P.H.,† former director of health education, Norfolk County (Mass.) Tuberculosis and Health Association, is now health education consultant, Bingham Associates Program, and is being loaned for five months to the Maine Department of Health as a replacement for RUTH CLOUGH,† who is attending the Harvard School of Public Health.

JAMES W. NOLAN, M.D., has been appointed deputy health commissioner, Albany County (N.Y.) Health Department.

ROBERT B. O'CONNOR, M.D.,† assistant professor of industrial medicine, Harvard School of Public Health, Boston, has been appointed medical director, United States Steel Corporation, Pittsburgh, succeeding J. HUBER WAGNER, M.D., who has served for 35 years.

DAVID E. OVERTON, M.D.,† former clinic physician, Newburgh Fluoride Study Clinic, New York State Department of Health, has been apopinted a district health officer, Suffolk County Health Department.

CHARLES H. RAMMELKAMP, JR., M.D.,† professor of medicine, Western Reserve University School of Medicine, Cleveland, and director of the Streptococcal Disease Laboratory, Warren Air Force Base, Wyoming, delivered a Harvey Lecture at the New York Academy of Medicine, New York City, on January 19 on the Epidemiology of Streptococcal Infections.

MALCOLM ROBBINS, M.D.,† on loan from the Epidemic Intelligence Service of the Public Health Service, has been named acting chief, Division of Communicable Diseases, Ohio State Health Department, to succeed MARTIN E. KELLER, M.D., now doing clinical medicine and research with the Kingsbridge Veterans Administration Hospital in New York, N. Y.

GRADIE R. ROWNTREE, M.D., M.P.H.,* associate professor, preventive medicine and public health, and chief of the Section of Industrial Medicine, University of Louisville School of Medicine, Ky., received the annual physician's award of the President's Committee on the Employment of the Physically Handicapped in recognition of widening job opportunities for the physically handicapped.

R. WALTER SCHLESINGER, M.D., formerly of the Public Health Research Institute of the City of New York, has been appointed professor of microbiology and director of the department, St. Louis University School of Medicine, succeeding LLOYD R. JONES, Ph.D., resigned because of ill health.

MARY E. SOULES, M.D.,† former Missoula city-county health officer, has resigned to become district health officer, for Crook, Deschutes, and Jefferson Counties Health Department, Bend, Ore.

HAROLD STEIN, M.D., former district health officer, Massachusetts Department of Public Health, has succeeded WILLYS MONROE, M.D.,† retired, as commissioner of public health, Pittsfield.

RUSSELL E. TEAGUE, M.D., M.P.H.,† former deputy regional medical director, District III, U. S. Public Health Service, and formerly for 15 years in public health work in Kentucky has succeeded Bruce Underwood, M.D.,* as Kentucky state health commissioner.

ALICE TURNER, former nutritionist, Southeastern District, Massachusetts Department of Health, is now consultant nutritionist, Rhode Island Health Department.

BRUCE UNDERWOOD, M.D.,* commissioner of health of Kentucky, has resigned to accept a commission in the U. S. Public Health Service, Washington, D. C., where he will be connected with the Hill-Burton Hospital Construction Program.

ESTELLA FORD WARNER, M.D.,* chief, Program Development Branch, Division of International Health, U. S. Public Health Service, who was the first woman ever commissioned in the Service, has retired and is living in Albuquerque, N. M.

NAOMI M. WEISS,† former research assistant, Institute of Administrative Medicine, School of Public Health and Administrative Medicine, Columbia University, has been appointed executive secretary, Health Division, Welfare and Health Council of New York City.

ALEXANDER WITKOW, M.D., M.P.H.,* commissioner of public health, Worcester, Mass., has resigned to become director of preventive medicine, Department of Health, Philadelphia, Pa.

## DEATHS

FRANCIS E. FRONCZAK, M.D., Dr.Sc.P.H.,* commissioner of health emeritus and consultant, Department of Health, Buffalo, N. Y. (Health Officers Section).

FRANK M. HALL, M.D., M.P.H.,* president of Southern Branch, APHA, on December 24, 1955 (Health Officers Section).

* Fellow.
† Member.

WALLACE B. MCCLURE, M.D., D.P.H.,† of Toronto, Ontario, Canada (Laboratory Section).

JAMES A. NEWLANDS,* president, Henry Souther Engineering Company, Hartford, Conn. (Laboratory Section).

WALTER J. PENNELL, M.D., M.P.H.,* health officer, District 4, State Department of Public Health, Wakefield, Mass., on December 30, 1955 (Health Officers Section).

LOUIS J. REGAN, M.D.,* legal counsel and director of medical relations, Los Angeles County Medical Association, on December 3, 1955 (Medical Care Section).

JAMES WALLACE, M.D.,* Renfrew, Ontario, Canada (Health Officers Section).

## CONFERENCES AND DATES

**American Public Health Association, 84th Annual Meeting, Atlantic City, N. J.**

Convention Hall, Atlantic City, N. J., November 12–16.

**State and Regional Public Health Meetings:**

Arizona Public Health Association. Rancho Grande Hotel, Nogales, Ariz. April 19–20.

Georgia Public Health Association. Hotel DeSoto, Savannah, Ga. May 28–30.

Illinois Public Health Association. St. Nicholas Hotel, Springfield, Ill. April 5–6.

Iowa Public Health Association. Savery Hotel, Des Moines, Iowa. April 11–13.

Kansas Public Health Association. Jayhawk Hotel, Topeka, Kans. April 11–13.

Middle States Public Health Association and the Ohio Public Health Association. Joint Meeting. Neil House, Columbus, Ohio. April 30–May 2.

North Carolina Public Health Association. Hotel Charlotte, Charlotte, N. C. May 31–June 1.

North Dakota Public Health Association. Bismarck, N. D. March 22–23.

Northern California Public Health Association. Asilomar Hotel. Pacific Grove, Calif. March 9–11.

South Carolina Public Health Association. Francis Marion Hotel, Charleston, S. C. April 19–21.

Southern Branch, APHA. Tulsa, Okla. April 4–6.

Western Branch, APHA, with Utah Public Health Association. Hotel Utah, Salt Lake City, Utah. May 31–June 2.

**Meetings of Other Organizations Coming in March, April, and May, 1956:**

American Medical Association. National Conference on Rural Health. Portland, Ore. March 8–10.

American Nurses' Association. Biennial Convention. Chicago, Ill. May 14–18.

American Pharmaceutical Association. Annual Convention. Detroit, Mich. April 8–13.

American Water Works Association. St. Louis, Mo. May 6–11.

Association for the Aid of Crippled Children. Annual Meeting. New York, N. Y. April 30.

Child Study Association. Annual Conference. New York, N. Y. April 2–4.

Community Health Week. March 18–24.

Eastern States Health Education Conference. New York Academy of Medicine, New York, N. Y. April 26–27.

International Union for Health Education of the Public. Third International Conference. Rome, Italy. April 27–May 5.

Inter-American Congress of Sanitary Engineering (Fifth). Lima, Peru. March 18–24.

Medical Social Work Section, NASW. Annual Meeting. St. Louis, Mo. May 20.

National Association for Practical Nurse Education. Edgewater Beach Hotel, Chicago, Ill. May 7–11.

National Committee on Alcoholism. Annual Meeting. Hotel Statler, New York, N. Y. March 29–31.

National Conference of Social Work. 83rd Annual Forum. St. Louis, Mo. May 20–25.

National Conference on the Community. Washington, D. C. March 27–30.

National Congress of Pediatrics, Sixth. May 1–6, 1956. Mexico City, D.F., Mexico.

National Health Forum (National Health Council). Sheraton-Astor Hotel, New York, N. Y. March 21–22.

National Multiple Sclerosis Society. New York, N. Y. March 13.

National Social Welfare Assembly. Spring Meeting. New York, N. Y. April 10.

National Society for the Prevention of Blindness. Palmer House, Chicago, Ill. March 26–28.

National Tuberculosis Association. 52nd Annual Meeting. New York, N. Y. May 20–25.

Pan American Medical Women's Alliance. Fifth Congress. Santiago and Vina del Mar, Chile. March 6–14.

Planned Parenthood Federation of America.

* Fellow.
† Member.

Annual Meeting. Waldorf-Astoria Hotel, New York, N. Y. May 1–4.

Public Health Conference on Records and Statistics. Washington, D. C. March 12–16.

Royal Society of Health of Great Britain. Blackpool, England. April 24–27.

Society of American Bacteriologists. Shamrock-Hilton Hotel, Houston, Tex. April 29–May 4.

Symposium on Venereal Diseases and the Treponematoses. Statler Hotel, Washington, D. C. May 28–June 1.

United States-Mexico Border Public Health Association. 14th Annual Meeting. Mexicali, Baja California-Calexico, Calif. April 13–16.

World Health Organization. Geneva, Switzerland. May 9 (tentative).


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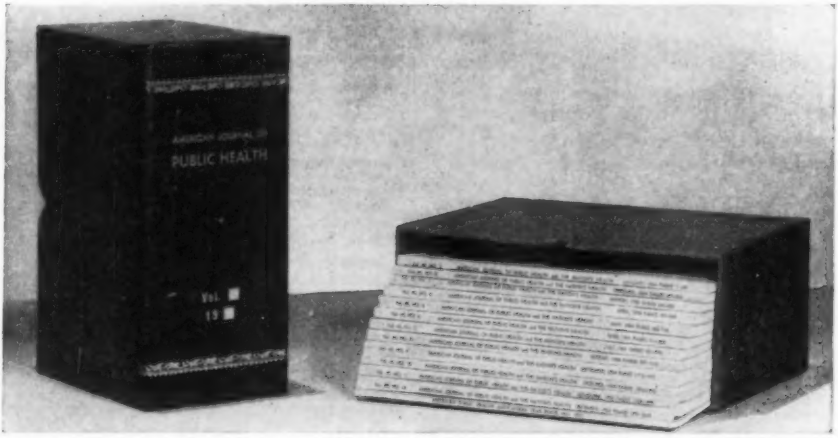


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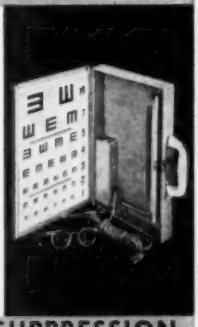
The Good-Lite Model A Translucent Eye Chart combines built-in fluorescent lighting and a washable plastic eye card for CONTROLLED light. Available in Snellen or Childrens "E" card models. $32.50

**2. HYPEROPIA**



The Optional Hyperopia Test locates farsightedness quickly and accurately with the addition of +2.00 lenses and a Good-Lite Eye Chart. For use with the Model A (above) or model B Charts (right). The addition of the glasses expands your Good-Lite system to a 2 point test. Hyperopia glasses $8.00

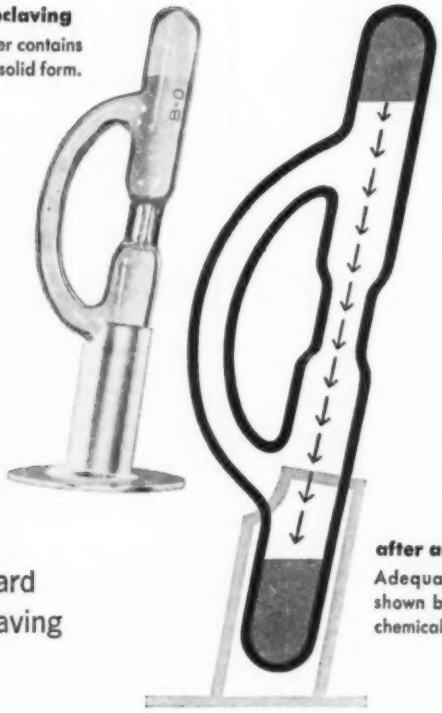
**3. MUSCLE SUPPRESSION AND IMBALANCE**

Now, with the addition of the Good-Lite Muscle Test you can extend your present system to a 3 point test. Test picks out children with poor eye muscle coordination. Unmistakably "passes" or "fails." MUSCLE IMBALANCE TEST $75.00

**THE GOOD-LITE MFG. CO.**

7636 W. MADISON, FOREST PARK, ILL.

**before autoclaving**
Upper chamber contains a chemical in solid form.




a safeguard in autoclaving

**after autoclaving**
Adequate sterilization is shown by presence of the chemical in lower chamber.

# new T@T (15-121) BREWER TIME-AT-TEMPERATURE INDICATOR

## for thermometric spotting of sterilizer load

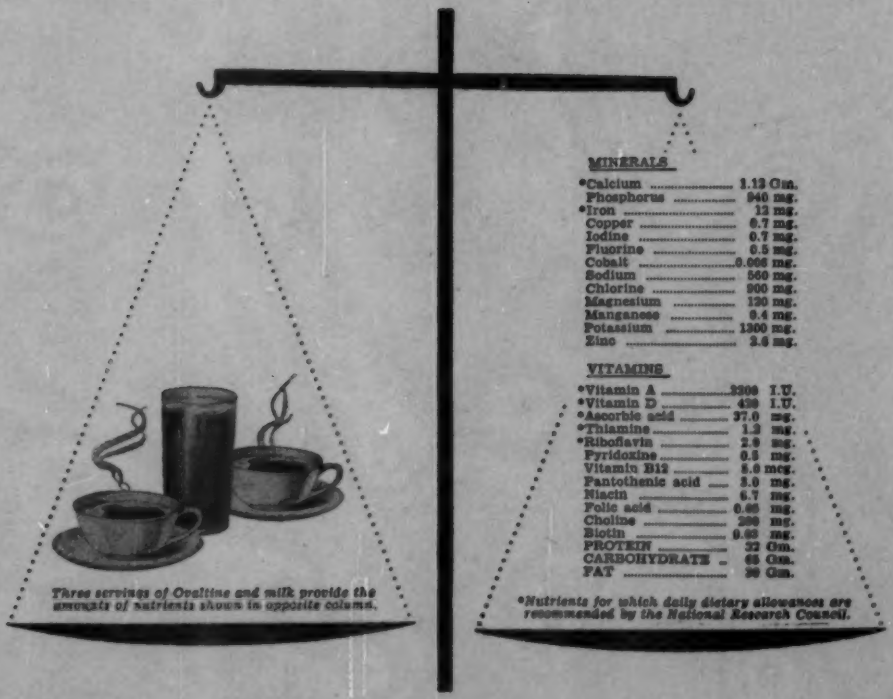
New Brewer T@T Indicator shows that a predetermined temperature (121° C) has been reached and maintained for the minimum required sterilization time of 15 minutes.

A distinct advance in thermometric measurement, Brewer T@T Indicators are
- small and compact—can be placed anywhere in the autoclave chamber
- inexpensive—re-usable

Chemical melting points have always been accepted as reliable indicators of temperature. Repeated tests have proved that the chemical in T@T Indicators melts at 121° C. It will flow from upper to lower chamber in 15 minutes if that temperature is maintained.

Detailed Literature on Request

**BECTON, DICKINSON AND COMPANY, RUTHERFORD, N. J.** B-D




# to "balance" the bland diet...

Whenever bland or special diets are required for your patients, Ovaltine in milk serves to help achieve good nutritional balance. Energy-packed, vitamin and mineral rich, this tasty beverage provides the nutritional extras to assist in combating stress, infections or other resistance-draining influences.

Ovaltine steps up those elements in which milk is lacking... the B vitamins, ascorbic acid and iron levels, to equal or exceed minimum daily requirements.

The "finicky" patient, old or young, who takes milk under protest usually looks forward to his drink of Ovaltine. It adds interest, flavor and zest to the diet. Because it reduces the curd tension of milk more than 60 per cent, it is extremely easy to digest and kind to the most delicate stomachs.

Served either hot or cold, Ovaltine in milk is a universal favorite at meals, bedtime, or during the morning and afternoon "breaks."

# OVALTINE®

*The World's Most Popular Fortified Food Beverage*

The Wander Company, 105 W. Adams St., Chicago 3, Ill.

DIFCO

# PPLO

## *ISOLATION and CULTIVATION*

THE INCREASING interest in *Pleuropneumonia-Like Organisms* as infectious agents has necessitated the development of suitable media for their rapid isolation and cultivation. *Pleuropneumonia-Like Organisms* can now be cultured easily in media prepared from Bacto-PPLO Agar enriched with Bacto-PPLO Serum Fraction and in Bacto-PPLO Enrichment Broth containing Bacto-Ascitic Fluid.

**BACTO-PPLO AGAR** is an especially prepared solid medium containing the essential factors from meat infusion required by the *Pleuropneumonia-Like Organisms.* This medium, enriched with Bacto-PPLO Serum Fraction, will support abundant growth of all P P L O strains.

**BACTO-PPLO ENRICHMENT BROTH** containing Bacto-Ascitic Fluid is a selective medium for the isolation and cultivation of P P L O from specimens contaminated with commensal organisms. This medium will support growth of all P P L O strains and effectively suppress the growth of most contaminating bacterial flora.

**BACTO-PPLO SERUM FRACTION** contains the growth accessory factors required by all strains of the P P L O and is used as an enrichment in Bacto-PPLO Agar.

**BACTO-ASCITIC FLUID** is a sterile, bile-free ascitic fluid specially prepared for enriching culture media used in the cultivation of the P P L O group and other fastidious microorganisms.

THE DIFCO MANUAL, *NINTH EDITION,*
*including descriptions of these media and their use,*
*is available on request.*

DIFCO LABORATORIES
DETROIT 1, MICHIGAN